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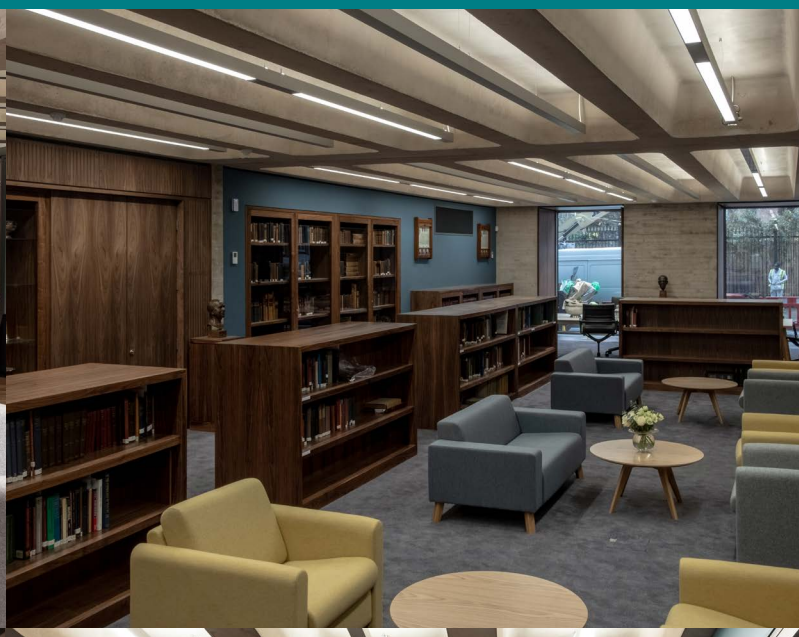
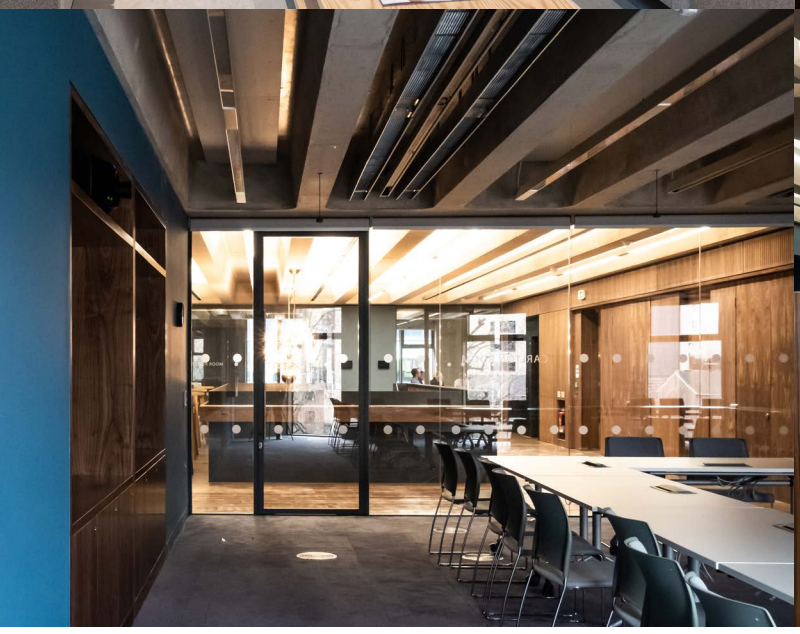
of the Royal College of Pathologists

Number 185 January 2019


The Royal College of Pathologists
Pathology: the science behind the cure

In this issue

Make your mark: sponsor a chair at 6 Alie Street

The College has completed the development of our new premises at Alie Street in Aldgate, London.

Our main lecture theatre has the capacity to hold 210 people and the other lecture theatres will hold between 45 and 100.

As we have done previously, we are offering the opportunity to sponsor a chair. For a donation of £2,000 your name will be affixed to a plaque to a seat at the College. Your name will also appear on a supporters' donor board that will be prominently displayed at the College.

To sponsor a chair please visit: https://uk.virginmoneygiving.com/charity-web/charity/finalCharityHomepage.action?charityId=1005175&pageId=995704

As the College is a registered charity, UK taxpayers may be eligible for a tax relief on this donation. For more information, please contact Daniel Ross, Chief Executive, at daniel.ross@rcpath.org or on 020 7451 6789.

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The Royal College of Pathologists
Pathology: the science behind the cure

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On the cover: images of the College's new premises at 6 Alie Street.

Credit: Peter Cook
www.petercookphoto.com

EDITORIALS

From the Editor

Dr Lorna Williamson

Happy New Year! I hope you have all had a restful festive season, and that the alcohol has not wiped the hard drive too much (did I use this feeble joke last year? I really can't remember). We start the year in our new College, so on pp30–31 we have provided a photo montage of some of the highlights of the building's key areas, including your new members' room.

In this year of uncertainty, one thing is for sure – we remain committed to doing the best we can for our patients. To this end, we start the year with a *Bulletin* theme on Quality and Safety, on pp5–17. We introduce our new Clinical Director for this area, Dr Berenice Lopez, and have covered a range of topics across pathology. Our outgoing Clinical Director for Clinical Effectiveness, Dr Bridget Wilkins, discusses continuous quality improvement and the intriguingly titled School for Change Agents programme. From Getting It Right First Time, through our new Key Assurance Indicators, to a proposal for an online platform for safe learning from errors – it's all here.

We introduce you to our small but highly effective Professionalism department on p26. Their work is closely linked our patient safety agenda and they'll be collaborating with Dr Berenice Lopez and many others to support members to deliver the best patient care, patient safety and quality of pathology services.

We are proud to report on recent announcements from government on medical examiners. Go to p32 to read about our role as the lead royal medical college for medical examiners, and how the posts will help improve patient safety and error reporting.

Talking of errors, we here are not immune. On p67, we need to correct a couple of errors in the July *Bulletin*, spotted by an eagle-eyed retired Fellow (thank you). Because we don't wish to become known as the *Blutlein*, please would all contributors check their copy carefully, and we will do the same in the publishing team.

Due in part to the recent College move, we asked members to use our wonderful updated resources to develop their own events for National Pathology Week. The reports on pp18–21 are just a sample of what you achieved, so many thanks to you all from the Public Engagement team. You have also told us that you'd like to hear more about what we are doing to influence our parliamentarians, so on p27 Janine Aldridge from our Media and Public Affairs team summarises our recent political engagement. There is a lot going on all the time – to keep up-to-date do read the President's editorial on p3 and also her monthly newsletter, which can be found in your inbox.

The International team continue their valuable work (pp35–41), hosting a delegation from Iraq and visiting Ukraine and Jordan to establish joint projects. We have also provided a lecturer to Madagascar – possibly the first time lemurs have appeared in the *Bulletin*.

Our Working Smarter section (pp42–45) usually provides highly useful food for thought, and this time we have excelled. The description of a 'one-stop shop' in Wales for rapid cancer diagnosis was recently mirrored in a report by Sir Mike Richards (although he did not specifically mention pathology...).

We have a pressing need to generate a long-term pipeline of pathologists of the future. So, in this *Bulletin*, we have largely devoted the 'trainee' section to our activities with undergraduates (pp46–51). We introduce our new undergraduate leads and report on another successful summer school. We also include the work of a haematology colleague to engage undergraduates with the diagnostic laboratory.

On the subject of haematologists, we celebrate international awards given to Professor Victor Hoffbrand and Dr Paula Bolton-Maggs – two each, in fact (pp55–56). We congratulate them both on well-deserved recognition from peers globally.

Finally, I report on one of the best conferences I have ever attended – the meeting on disruptive technologies, organised by the College (pp27–29). I spent two days marvelling at the game-changers that are either already with us, or which are set to transform the ways we work over the next decade. Don't worry, you will not be out of a job, but your tasks will evolve, as they have always done. Which brings us full circle to patient care – the unchanging heart of everything we do.

Dr Lorna Williamson
***Bulletin* Editor**

From the President

Professor Jo Martin

One thing is certain: 2019 is another Gregorian calendar year with a great deal of uncertainty. When we think about the world, there is a great deal of turmoil. For those in Europe, we are facing a frantic first quarter period of international diplomacy to try to establish trade and practical working agreements between the UK and the European Union. For those of you in areas where you are living with daily threats from violence, uncertainty about survival and the society in which you live has become part of your life.

Uncertainty is an uncomfortable feeling for most of us, but it is also such a key feature of life for our patients. A while ago I was asked to talk with members of parliament interested in blood cancer. In preparation, I asked a great friend of my son, who has had a lymphoma, if I might use his story to illustrate the role of the many disciplines in pathology. He was kind enough to agree, and was happy for us to use his experience to help spread the word about the role of pathologists in diagnosis and treatment. While I made a rough tally of the many years of training and expertise that pathologists contributed, just to the diagnosis, (at least 88, by the way, including the work-up exclusion of diagnoses by microbiologists, clinical biochemists, etc.), I also tracked his journey to his first treatment. The period of uncertainty while he waited to find out from a bone marrow trephine whether his lymphoma was stage 1 or stage 4 was particularly striking. He knew he had cancer, but he didn't know quite how bad it was...

Professionally, across all our diagnostic areas, we 'major' on reducing uncertainty. Uncertainty over a cause of infection, the potential presence of drugs or toxins, the meaning of aberrant liver enzyme results or blood profile, uncertainty over the type, grade or stage of a tumour. Sometimes it may take a while to track down what is going on, but we try to get to the heart of the matter as quickly as possible. Any delays in getting a patient the correct diagnosis and the appropriate treatment don't sit well with us. This is where we come to things stopping us doing what we need to do as fast and as safely as we can.

Workforce. You are key, and we know you are stretched. I know that I have written about this previously, but it is really important to us all and I do know that not all of you read every *Bulletin* cover to cover (Shame!). Hopefully you will have seen at least some of what we have been doing to try to make sure we have enough pathologists, of all disciplines, to diagnose and care for patients. We have been collecting data through workforce surveys, the first of which has been published, and which has had a significant impact and very good coverage. We have another in the last stages of preparation for publication, and a third just gone out to the haematologists. (Please make sure your department completes them – accurate data are essential). More will follow, and the College workforce team have been epic in this.

In parallel with our diagnostic work on workforce issues, we have been ramping up our efforts to attract people into our professions, through activities with undergraduates, postgraduates and trainees. We are also trying to make sure that the training and working life is attractive, as I have written about before. In Aberdeen, on a recent #labtour visit, I saw some great examples of doctors being attracted into training as pathologists through foundation rotations in different pathology disciplines. The conversion rate into pathology training was impressive.

Some new developments in relation to training: in the UK there has been a lot of discussion over the format of training, and the ability to be more flexible in training patterns. In particular there is discussion over competence-based training, rather than adhering to a strict timescale. There is obviously a limit to training truncation because of the need for experience and exposure to clinical variation, but people do learn different skills at different rates and some have prior experience that brings them up to speed faster. Some centres have reported that 'restarting' programmes can be problematic for those with some prior experience in pathology because of current rules in some training programmes, and a little more flexibility would be helpful for these trainees. There is also discussion about the ability to do 'step on step off' patterns, where you might wish to stay at a particular level for longer, to suit your circumstances, and family locations, rather than the virtual 'lockstep' year by year based system we have currently. It also raises the possibility of simpler recognition of competencies gained outside a formal training post. So all very intriguing and with great possibilities - if thought through properly, if done with trainee input, and with the ability to do some in-flight re-adjustment if needed!

The pathology network programme in England continues under the leadership of NHSI, as does the procurement process for primary HPV screening

in cervical cytology, and the roll out of the genomics centres via NHSE. Similar programmes are in progress in many other countries. All these processes have highlighted the need for close liaison of those commissioning programmes and diagnostics with professionals and for truly informed commissioning.

There is also a continuing need for bodies such as NHSI, HEE, NHSE and PHE to work together. The voice of the profession has been heard in this respect in England at least, as joint structures are being formed between NHSE and NHSI, and HEE now has links with NHSI. Apart from the glossary and masters level education needed to understand exactly what these bodies are, do and how they have previously interacted (or not), we are pleased that the silo working that has produced many troubling situations (and about which we have been pressing) is being reconsidered. For example, there was the decommissioning and reduction of cervical screening for high-risk women through sexual health clinics when the latter moved out of NHSE commissioning structures into local authorities. This screening has now been reinstated. Thankfully.

Hopefully, the beginnings of better coordination of working will continue and we will continue to encourage this. We still have lots to do though, to make sure that some of the difficulties of the past will not be repeated. These are best avoided by early, continued and genuine engagement with the professionals who know what they are doing! 'I told you so' is not a great place to be in for us, or for patients.

I have continued to visit labs (#labtours) and to learn about the great work being done. The design of the Royal Derby Hospital mortuary area and 'zig zag' viewing gallery is particularly innovative and I had mortuary envy for the first time (ours at the Royal London Hospital is good too, but the gallery at RDH is superb). In relation to mortuary issues, we have done some work with the Human Tissue Authority (HTA) on a simple guide to mortuary regulation and some of the incidents and events that need to be avoided. The summary is available as a learning module on the eCPD app, or via the HTA website. Please direct your medical director, chief executive and board to this: they need to know, and to make sure that this key area for patient dignity is properly supported. Mistakes in mortuary practice can be distressing and high profile. The learning, if not the precise regulation, is applicable to every centre that has a mortuary or body store.

The fabulous advances in science and technology being driven by pathologists working with a wide range of other disciplines have been showcased at a range of recent meetings. These changes (coming soon to a lab near you) include scanning mass spectrometry, point of care blood counts, extended rapid point of care respiratory infection screening and AI systems. I was particularly taken with an AI system that highlights potential helicobacter in a whole slide imaged haematoxylin and eosin stained slide, and a system that shows areas of potential malarial parasites on a scanned blood film. While these are not autonomous, and will always require professional judgment, it might be nice to have a system that helps you not miss things.

Patient safety is a key theme for this *Bulletin*, and whilst we are one of the most advanced professions in terms of quality control and safe systems, we are always striving to do better, and I hope that you will enjoy the articles.

So lots to do, and lots to look forward to in 2019, and I wish you all the very best for the coming year!

Professor Jo Martin
President

Figure 1: How often learning is shared beyond departments: % of respondents made aware of alerts and quality issues.

The College's patient safety programme

Professor Jo Martin

We all know things that have not gone well at work. Our systems and processes are designed to help keep patients safe and, increasingly, safety is becoming part of learning. Human factors training is finding its way into our portfolio. Despite this, errors and incidents still happen.

We also know from a survey carried out a little while back (see Figure 1 on p4) that it isn't common for people to share learning beyond their own department. Even learning across departments in the same hospital is not a regular feature in the vast majority of organisations. I have seen this in person when travelling around to meet colleagues in the UK and abroad. They have shown me things that have gone wrong, which they have dealt with very effectively, but which may also pose a risk for other pathology services. The major exception is the Serious Hazards of Transfusion (SHOT) system, where the focus on cross-organisational learning for patient safety is absolute. It is a real example of sharing and learning from both errors and incidents, but also from good practice.

At the College, we have been thinking about how we might help promote and spread this broader culture of learning for patient safety across all our disciplines. One of the interesting features of many College and specialist society events is that they bring together colleagues from many centres, but they don't generally offer the opportunity to talk about cross-departmental learning arfrom incidents and events.

I have been talking with a range of colleagues in other specialties about this. The orthopaedic surgeons have a national joint registry, where wrong implant data is shared nationally. Yet outside of that setting the problem persists – if you do hear about any problems at other organisations, it is usually over a coffee with a friend rather than in a systematic way.

The College has been developing a programme of work to promote learning about safety. The theme for this edition of the *Bulletin* is part of our programme of publications and events in this area. We have published the beginning of a series of patient safety bulletins, which do help to share learning. These simple resources are available on the College website and also link in with CPD for your portfolio via the eCPD app (together with a series of other safety resources). It was interesting bringing these first safety bulletins together, since on several occasions I would circulate a draft for comment and the response would be, 'that happened to us'. We hope that by sharing knowledge through the bulletins, repeated incidents of the same type will reduce.

We have set up an email address where you can share incidents and events that others might learn from: safety@rcpath.org. From the information you share we will create short summaries (with no identifiable patient data) to be shared as bulletins (see the examples in the published safety bulletins at www.rcpath.org/patientsafetybulletins). We will not use the name of the sender or the organisation involved.

A warm welcome in this context to our new Director of Patient Safety and Quality, Dr Berenice Lopez. She will be working with our Vice President Dr Tim Littlewood, Dr Nadeem Moghal, the College's Professionalism department and other College colleagues on the safety programme. We look forward to making SHOT proud by finding out what we need to avoid, and what is the good stuff.

Professor Jo Martin
President

Introducing the College's new Clinical Director of Quality & Safety

Dr Berenice Lopez

Berenice Lopez is a consultant chemical pathologist with metabolic medicine at the Norfolk and Norwich University Hospitals. This article briefly sets out her plans for her work with the College.

She originally trained as a general practitioner (GP) and worked as a GP partner for a number of years before retraining in chemical pathology. Berenice has never forgotten her generalist roots and enjoys the cross-cutting themes of medical education, quality and patient safety. She worked with the Royal College of General Practitioners to develop the GP curriculum in the area of metabolic medicine

and has also lectured extensively across the UK on the topic of laboratory testing in primary care. Her particular interest, however, is patient safety.

Berenice has contributed to a number of national patient safety initiatives including the UK Malnutrition Task Force and the National Acute Kidney Injury programme. She has held a number of senior roles, including membership of the NHS England Primary Care Patient Safety Expert Group. More recently, she has been Chair of the National Advisory Panel for Quality Assurance in Chemical Pathology and is Associate Medical Director in Quality and Safety at her trust.

Of her new role, working closely with the College's Professionalism department, Berenice said, 'I am delighted to be appointed to this role for the College. Our discipline is focused on standards and quality. This is embedded in what we do and we have led the way in their assessment, but the link between this and patient safety is, in my experience, sometimes lost. We are critical members of healthcare teams, intersecting all aspects of patient care, and when things go wrong they may well affect hundreds of patients. The patient safety agenda is highly relevant but may need to be translated so that it speaks to our discipline.'

Of her plans, Berenice says, 'The pursuit of safety is not for the faint-hearted; there is a landscape of obstacles and it is a never-ending task, but this is important and rewarding work. My aim is to engage with, encourage and support my colleagues in this work, wherever they may be practicing. I am keen to promote systems thinking and a Safety II approach (a proactive approach aiming to strengthen the ability of clinicians to prevent problems before they occur and ensure high quality care even when there are pressures and competing demands). Delivering on this agenda will draw on my experience nationally and within my trust.'

Dr Berenice Lopez
Clinical Director of Quality & Safety

The challenge of embedding CQI in pathology

Dr Bridget S Wilkins

Do you have 'wicked' problems in your department? Have your attempts to change things become blocked or failed to stick? This article provides a wonderful trailer for the College's first CQI Awareness Month in May 2019.

Background: a brief history of CQI in pathology

The NHS has increasingly recognised the importance of continuous quality improvement (CQI) since the mid-1990s. It has adopted 'lean', the basis of the world-renowned Toyota Production System, as its chosen route to achieve this. There is now generally strong awareness of CQI in frontline primary and secondary healthcare settings, even if genuine culture change remains limited.

It is puzzling why pathology is lagging behind the overall healthcare service. NHS pathology laboratories have a strong tradition of rigorous quality assurance and audit, a generally positive track record of innovation and a good understanding of research methods. Consequently, it would seem to be straightforward to incorporate CQI – which includes elements of all of these – into everyday practice. To build CQI capability, the National Pathology Service Improvement programme ,funded by NHS England from 2005 to 2012, invested more than £60m to support CQI initiatives at 15 pilot sites. In the devolved nations, initiatives to promote CQI have been more holistically directed at hospitals and/or health boards, rather than specifically at pathology.

A suite of extremely useful guidance, tools, exemplars and other resources was published during the years of the National Pathology Service Improvement programme, but the impact has been limited. Most of the pilot sites applied the funds to local projects, learning and applying lean methodology under external direction but without any culture change. These projects remain as standalone successes or have gradually unravelled. A second, smaller group of pilot sites engaged more actively, developing local lean champions. These projects have lasted better and undertaken additional CQI initiatives, but quality improvement remains ad hoc and is not done as part of routine work. In the third and smallest group, the investment was seen as an opportunity to take ownership of 'lean'. The initial projects have had sustained benefit and CQI is now a regular feature of 'usual' work. Only in the third group has there been any significant culture change to embracing CQI.

In the absence of formal analysis, the quality of clinical and scientific leadership at the pilot sites has been cited as a key factor determining the longer-term outcome of the Pathology Service Improvement interventions. NHS England subsequently invested significantly in leadership development through

programmes offered to senior pathologists from 2011 to 2016. These highly regarded programmes engaged approximately 130 medically trained pathologists, clinical scientists and biomedical scientists. One or two individuals from most large hospital trusts in England have benefitted and many have gone on to take up local or national leadership roles. Still, one individual attempting to influence a department of several hundred is a tall order. There is still a large unmet need for CQI training and leadership skills development within pathology. Delivering either without the other is recognised at the highest levels within the NHS as not cost effective.

The nature of problems: are they 'wicked'?

The challenge of implementing CQI in pathology lies only 20% in building knowledge of CQI methods. 40% sits in the realm of developing emotionally intelligent leadership behaviours to articulate vision, engage stakeholders and persist against adversity. The next 20% lies with less tangible aspects of leadership, such as skills to understand and navigate the organisations and systems through which health and social care are delivered.

The final 20% is reserved for the nature of the problem itself. Pathologists and scientists often don't pay enough attention to the nature of problems, tending to look at them simplistically as being somewhere along a continuum from easy to difficult. But what is 'difficult'?

Rather than using a scale, problems can much more usefully be classified using typology from the work of Keith Grint[1] and others who have studied problems and their solutions over many years (see Figure 1). Problems can be considered as:

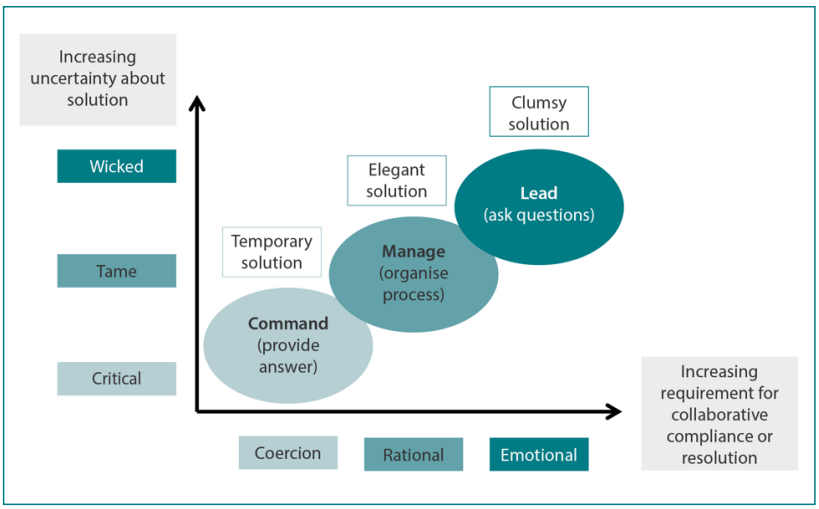
- critical (emergencies)
- technical or tame (may be complicated)
- adaptive or 'wicked' (complex).

In a critical or emergency situation, a well-understood and often standardised solution is typically implemented rapidly to limit the damage and create safe conditions to begin to recover. Examples would be police, fire or ambulance responses to a 999 call. There is a very direct cause-and-effect relationship between the problem and the solution, without many steps between one and the other. The solution is often only temporary, and easily accepted as such by those involved because of the urgent nature of the problem. The appropriate style of leadership for critical problems is directive or commanding; the priority is to implement the solution as quickly as possible. These are very important and urgent problems but – at least in the immediate phase – they are 'easy' because there is usually one obvious and very well understood solution to deliver.

Technical problems are what we spend most of our time dealing with every day. They are typically easy, or at least logical, to define. Like critical problems, they have a direct relationship between cause and effect, although there may be a much longer pathway between the two. When the pathway is very long, the problem may appear complicated, but it is solved by rational application of technical knowledge and a stepwise approach. We often write standard operating procedures to capture the individual steps in such complicated processes, to ensure consistency. When we encounter an unknown step in a technical problem, the likelihood is that we have experience from similar problems that we can adapt. These problems are sometimes referred to as 'tame' because they are hardly problems at all – they are readily dealt with by rational management and the appropriate solutions are 'elegant'.

An adaptive or wicked (or complex) problem, however, is completely different. It may be difficult to define clearly; its nature only emerges over time and often incompletely even then. There is no straightforward cause-and-effect relationship – there are too many contributing factors, too many competing stakeholders, and there is too much uncertainty about the potential solutions. True leadership comes into its own here. 'Adaptive' in style, with the leader(s) able to engage the hearts and minds of participants, rally them behind a compelling cause and keep everyone focused through many twists, turns and blind alleys until a co-created solution is reached. There is often no truly perfect solution to a wicked problem, just one that is good enough for now while further work is done to create the next steps. These are 'clumsy' solutions borne of the need to do something, rather than nothing, while accepting that perfection is not attainable.

Figure 1: Keith Grint's typology: classification of problems.



Identifying wicked problems and implementing CQI

Keith Grint uses the analogy of the architect and the bricoleur to explain tame/wicked problems and elegant/clumsy solutions. An architect starts with a clean sheet of paper and, following their client's brief as they understand it, designs the perfect building. What starts off perfect on paper then has to be realised, which takes time and the coordinated input of

many contributors, each knowing how to achieve their little bit of the plan. But there is a long lag time during construction, unexpected extra costs, delays and compromises, and the final result may no longer be fit for purpose by the time it is realised.

In contrast, a bricoleur is someone who is something of a 'jack of all trades' – a house builder and decorator, with some practical design skills, too. You call them in to discuss the house you already live in, with all its imperfections, to undertake alterations that you think will make it perfect. As the work gets under way, you discover unexpected obstacles; work stops until these are overcome. While waiting, new ideas lead to changed plans and the work changes as a result. Through all of this, you continue to live in your house, moving in and out of different areas to accommodate the evolving work. When the bricoleur and their team leave, a photograph of the house would not closely resemble the picture you had in your mind at the outset, but the result is highly functional and unique for your needs.

Trying to solve a wicked problem as if it were a technical one, with an elegant solution, is doomed to failure. Recognising a problem from the outset as being wicked sets us off along a completely different pathway of creating solutions, incrementally and collaboratively, to emerging aspects of the problem that can't be known at the start. This is the approach that will eventually succeed – imperfectly but functionally.

Pathologists and scientists tend to approach topics for CQI as technical problems, partly because that fits with how we have been trained to work in our spheres of clinical and scientific knowledge. One of the most useful steps we can take to address the challenge of embracing CQI in pathology is to become bricoleurs. We need to recognise that most of the problems we seek to improve, from seemingly small changes within our own departments to network-wide reconfiguration of service provision, are wicked problems for which we need clumsy solutions.

References at www.rcpath.org/bulletin-jan19

Dr Bridget S Wilkins
Consultant Haematopathologist, Guy's and St Thomas' Hospitals Foundation Trust and Hampshire Hospitals Foundation Trust

We are all change agents now (and have the certificates to prove it)

If you're enthused by the preceding article on continuous quality improvement (CQI), you now need to discover some practical skills – read on to hear find out more about one approach.

Dr Bridget S Wilkins

Maria Marrero Feo

In the spring of 2018, the Clinical Effectiveness team signed up to take part in the School for Change Agents (S4CA) programme run by NHS Horizons. Addressing predominantly the behavioural aspects of CQI, this is an annual mass-participation programme of five webinars supplemented with additional online learning and reflection modules. We had two aims:

- to supplement our knowledge of the practical tools of CQI (plan, do, study, act [PDSA] cycles, lean, A3 thinking, driver diagrams, stakeholder mapping, etc.)
- to consider how the course was presented to inform creation of our own CQI awareness webinars.

More than 1,000 participants joined the webinar series and 80% completed the full programme, including an additional 3–4 hours of online learning and reflection to become certified Change Agents.

Highlights of the programme

For us, highlights of new learning from the first module were the 'old power-new power' model (Figure 1, p9) and guidance on how to be safe and successful rockers of boats. In the second module, we particularly valued learning ways to build change agency (individual empowerment to act) and balance this with existing organisational structures. We learned the difference between reactance and resistance to change in the third module and were encouraged to co-design improvements with stakeholders from the start – getting investment in our change efforts rather than hoping for buy-in at a later stage. There was also some valuable content on resilience, emphasising the importance of focusing on recharging rather than enduring.

The fourth module addressed engaging others. We learned about lone wolves, mobilisers and organisers. (Systems in the NHS tend to encourage lone wolves, but mobilisers and organisers are the folk who best achieve change.) We were also introduced to a framework for storytelling, using

Kate Stewart

public narrative to achieve engagement (moving the focus from 'me' to 'we' and creating the 'fierce urgency of now'). The fifth module explored the concepts of horizontal and vertical development and the importance of avoiding being 'dependent conformers' that many organisations favour even despite saying otherwise.

The additional modules explored some of these themes in more depth and introduced us to additional videos and reading material. There was a final invitation to reflect on our learning from the course and what we would do differently as a result.

What we took away

We learned greatly from the presentation and style of this online programme. The small team at NHS Horizons had put immense effort into selecting content and presenting it in an engaging way. The two main presenters differed in their presentation styles – a welcome balance suiting our different learning styles. Each webinar was built around slides made engaging and memorable through use of infographics, cartoons and photographs. Where slides were wordy, most were given visual interest by using graphic text, call-outs and interwoven pictures. Some were still rather dense – it was useful to experience first-hand the marked negative impact of this.

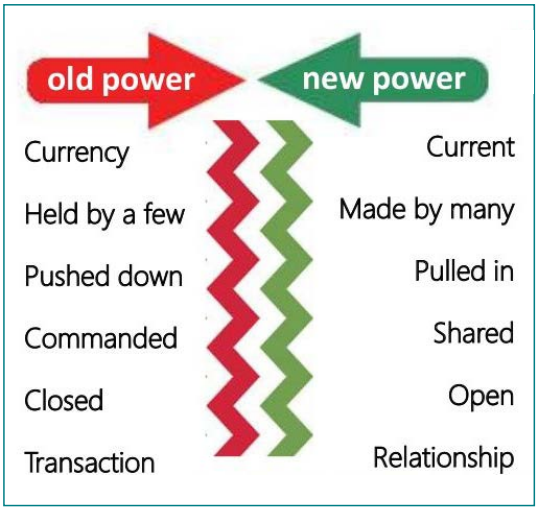


Figure 1: The old power-new power model.

In addition to a Twitter feed and the chatbox, interactivity was achieved by intermittent polling during the live webinars and there was an additional invitation to participate in a 'randomised coffee trial' to discuss the programme's themes with a randomly matched S4CA participant. All of the webinars were recorded and made available for later viewing, including chatbox content, so it was possible to participate at a later time without losing too much of the immediacy of the live sessions. The slides were also made available via Slideshare and references to sources and additional material were mostly via hyperlink, making them instantly accessible.

The extra online work – phased over several weeks after the original webinars – was good for keeping knowledge at the forefront of our minds and was well incentivised by the simple (and inexpensive) promise of certification. Despite a publicised timetable, however, the finale was disappointingly disorganised, with consequent loss of momentum and enthusiasm. We learned the importance of maintaining attention to detail until all such loose ends are tied. Still, we all gained our certificates in the end.

Final reflections

We are enthusiastic to create a webinar series to support the College's work in raising CQI awareness. We learned a lot about making webinars engaging and a few things to avoid when developing online resources. We recognise that this style of delivery is ideally suited to vertical skills development and that most horizontal learning content can be signposted for individuals to pursue separately.

So, what are we going to do with this knowledge? Watch our webinars during CQI Awareness Month in May 2019 to find out. Meanwhile, you might consider joining the School for Change Agents 2019, due to begin in March.

You can register today at http://horizonsnhs.com/school/ and you could join us as proud Change Agents for the future.

The Clinical Effectiveness team proudly displaying their certificates.

Dr Bridget S Wilkins
Consultant Haematopathologist

Maria Marrero Feo
Clinical Effectiveness Manager

Kate Stewart
Clinical Effectiveness Coordinator

Dr Phillip Monaghan

Linking laboratory testing to improved patient outcomes

Laboratory medicine is a key component of clinical care, guiding clinical management decisions. This article highlights some of the practical approaches available for the evaluation of laboratory tests in the context of clinical pathways.

Background

Laboratory medicine is integral to delivering improved outcomes for patients. The provision of accurate test results in a timely manner, alongside their interpretation for complex cases, is highly valued. Indeed, a recent interview-based study of 79 oncologists and cardiologists from the USA and Germany found that 75% of patients underwent in vitro diagnostic testing, concluding that in vitro diagnostic test results guided clinical decisions in 66% of cases.[1] Furthermore, a significant proportion of clinical practice guidelines include recommendations for use of laboratory tests. This clearly highlights the vital role laboratory medicine plays in the clinical decision-making process, representing an indispensable support service for clinical practice. It also emphasises the responsibility of laboratory professionals to assure the service provided is of appropriate quality from the perspective of their clinical users, the clinician and ultimately the patient. To this end, laboratory diagnostic services should endeavour to adopt an approach to quality through appropriately defined assurance indicators focused on clinical effectiveness, providing measures of the value of laboratory medicine established on the utility of testing within clinical pathways.

How can we assess the usefulness of laboratory tests?

Although much of laboratory testing guides downstream clinical interventions to improve patient outcomes, the link between testing and outcomes is often indirect. It relies on a detailed understanding of the unmet clinical need and thus the clinical question the test is aiming to address, along with the subsequent clinical intervention the test result will inform. The important implication in this regard is that the test result alone is of negligible value. As such, full mapping of the clinical pathway to define the purpose (intended clinical application of the test in the clinical pathway, e.g. diagnostic test, screening test) and role (positioning of the test in the clinical pathway, e.g. triage test, replacement test) of the laboratory test and, importantly, the clinical management decisions that the test result will guide, thereby enables the unmet clinical need to be addressed. Furthermore it will be complemented by the anticipated impact on patient outcomes.

A strong clinical–laboratory interface is paramount to assure an effective clinical decision-making process. There is opportunity for laboratory professionals to play a key role in the development and implementation of clinical pathways for new and existing laboratory tests. Stakeholder involvement (i.e. working together to overcome the conventional silos across disciplines) is fundamental to drive the adoption of innovative testing, ensuring results are available and acted upon in an appropriate and timely manner, with a robust link wherever possible to clinical intervention and patient outcomes.

Developments to address the question of test value

To realise the value of laboratory medicine, the European Federation of Clinical Chemistry and Laboratory Medicine (EFLM) Working Group for Test Evaluation (TE-WG) has developed an unmet clinical needs checklist (Figure 1) as a practical tool to assist laboratories and other key stakeholders in the clinical needs assessment process for new and existing biomarkers and clinical pathway development.[2] The tool is aligned with the National Academy of Medicine (formerly the Institute of Medicine) recommendations and the US Food and Drug Administration and Conformité Européene regulatory framework requirements. The checklist intends to achieve more efficient biomarker development and translation into clinical practice. Another key purpose of this checklist is to encourage and facilitate interaction between laboratory professionals, clinicians and other key stakeholders, to better understand clinical pathways at a local level and the complexities of clinical needs assessment. Acknowledging any barriers to adoption or changes in practice to ensure innovative laboratory tests and test strategies are feasible for implementation in routine practice.

In collaboration with the EFLM Working Group for Distance Education and e-Learning, the TE-WG has developed an interactive version of this checklist, now openly available through the EFLM e-Learning platform: https://elearning.eflm.eu/course/view.php?id=11. The platform also contains a short video explaining how to use the interactive checklist, including worked examples. The TE-WG has defined unmet clinical need as 'any missing or inadequately performing component

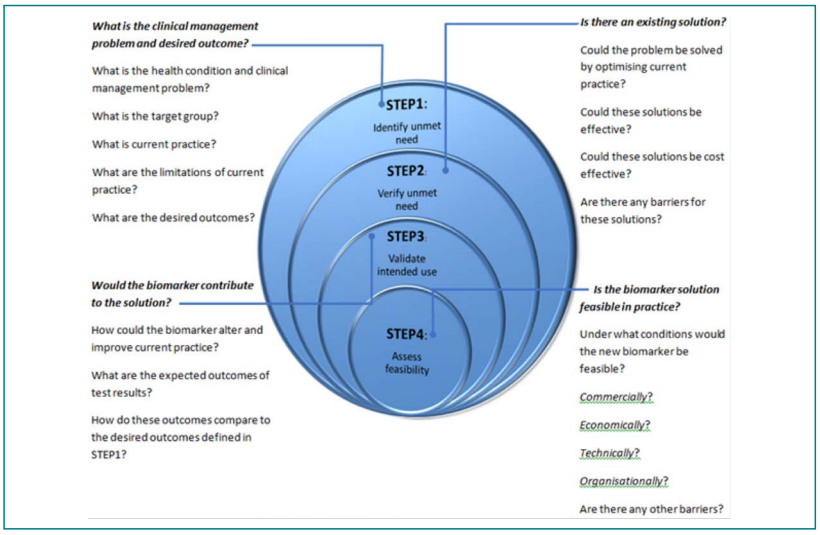


Figure 1: The EFLM TE-WG 14-item checklist organized into four domains. Reprinted with permission from Monaghan *et al*.

of a clinical pathway'.[3] This definition therefore warrants explicit mapping of current practice to identify opportunities for improving management and thereby patient outcomes. To reflect this, the interactive version of the checklist is supplemented by clinical pathway mapping templates to help stakeholders visualise current practice and link information from laboratory testing to clinical management decisions and health outcomes. A worked example is provided on the e-Learning platform (for using the interactive checklist and pathway mapping templates) to define current practice and identify and evaluate the potential unmet clinical need for a new high-sensitivity troponin assay for rapid rule-out of non-ST-elevation myocardial infarction.

The corollary from this approach is the early design of analytical and clinical performance specifications to guide test evaluation studies. The TE-WG has therefore written a practical guide to evaluating new biomarkers for this purpose in a harmonised way, keeping the clinical pathway and outcomes as the key central drivers in the process.[4] In doing so, biomarker development can be aligned to address existing gaps in clinical care and mitigate research waste and inappropriate utilisation of laboratory tests where clinical benefit is uncertain or at worst potentially harmful. The dynamic nature of the test evaluation framework from biomarker to medical test becomes apparent when summarised as a cyclical process (Figure 2).

Analytical performance (e.g. imprecision, trueness) and clinical performance (e.g. positive predictive value, negative predictive value) both affect the ability of a test to improve patient outcomes. However, improvements in these test performance specifications alone may not benefit the patient if they do not positively influence patient management, highlighting the value of the holistic process that drives the downstream consequences of testing in the clinical pathway. Approaches for setting analytical performance specifications (APS) that best serve patient needs was the topic of the 1st Strategic Conference of the EFLM on 'Defining analytical performance goals 15 years after the Stockholm Conference on Quality Specifications in Laboratory Medicine', held in Milan in 2014. Here, it was proposed that the existing hierarchy for setting APS be simplified to encompass three different models based on:

- model 1: outcome studies (model 1a – direct outcome, model 1b – indirect outcome)
- model 2: biological variation
- model 3: the state of the art.

Critically, it was also acknowledged that selection of the best approach for APS should be guided by the intended use (purpose) of the test.[5] If you consider the purpose of diagnostic testing for example, improvement in patient outcomes (model 1a or 1b) are only realised if enhancements in analytical performance augment clinical performance (e.g. diagnostic accuracy for increased diagnostic yield) and thereby clinical effectiveness (e.g. better clinical management decisions and therapeutic impact), through the test-management-outcome pathway. This may not be possible to define for all tests; however, all other models of setting APS should be weighed against that standard and regarded as approximations.[6]

APS model 1a (outcome studies) at the summit of this APS hierarchy requires diagnostic randomised controlled trials and, as such, is only really feasible when assessing tests with a standardised clinical decision pathway where the link between the test, clinical decision-making and clinical outcomes is straightforward and strong, with outcomes that can be measured in a relatively short time period.

Model 1b, which uses a linked evidence approach, provides a pragmatic solution in many cases. Quantitative estimates of patient outcomes based on variable APS is achievable through application of decision analysis. A good example was provided by Karon and colleagues[7] who applied simulation modelling to assess the impact of variable APS for point-of-care testing (POCT) glucose monitoring on insulin dosing errors for patients on tight glycaemic control protocols. This study concluded that a 20% total allowable error for the POCT glucose meter would allow large insulin dosing errors that might lead to hypoglycaemia. The underlying principles of clinical performance specifications (CPS) are well established. However, the TE-WG is currently developing a simple step-by-step guide for setting minimum acceptable CPS for the development and evaluation of biomarkers that are fit for purpose to improve patient care.

The approaches to laboratory test development and evaluation outlined in this article chime with a number of the College's proposed key assurance indicators, which are more contemporary, more

focused on value, with measurable indicators of clinical effectiveness of laboratory medicine in the context of appropriate test utilisation. For example, the process demonstrates 'commitment to innovation and continuous quality improvement', evidenced through systematic approaches to the validation and adoption of new technologies. The

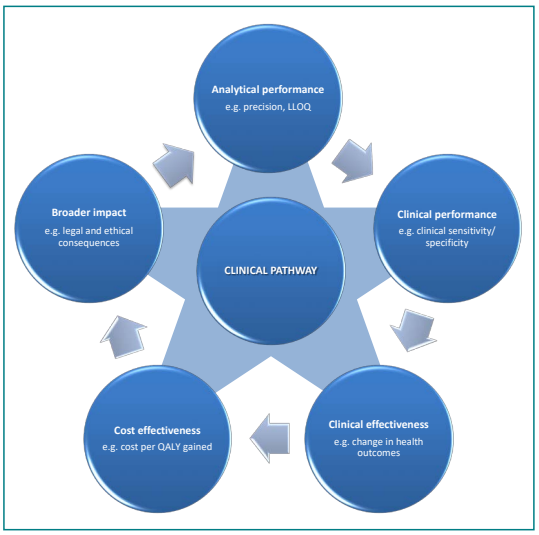


Figure 2: EFLM TE-WG cyclical framework for the evaluation of in vitro diagnostic tests. Adapted with permission from Monaghan *et al*.

practical tools now available, including the TE-WG framework for test evaluation and the unmet clinical needs checklist, may also prove useful for the basis of clinical audit projects and continuous quality improvement initiatives. As an example, the test evaluation framework has recently been utilised by the Oxford Diagnostic Horizon Scan Programme to map evaluation data for POCT from published diagnostic horizon scan reports, extracting information from 500 primary studies. They found that few reported test evaluation studies evaluated clinical effectiveness (18.2%) or comparative clinical effectiveness (10%), which compares two or more point-of-care tests.[8]

How you can help

The TE-WG would like to encourage use of both the test evaluation framework and the new interactive unmet clinical needs checklist. The checklist can be used before new biomarkers are developed or fully validated for clinical use, as well as when assessing the clinical need and effectiveness of existing biomarkers. The TE-WG would also really appreciate feedback to inform future refinement of the checklist based on user experience. A corresponding online discussion forum along with a feedback form, are available on the e-Learning platform.

The success of clinical interventions is profoundly dependent on appropriate use of laboratory testing and interpretation. Addressing the clinical need and intended clinical application of laboratory testing in view of the clinical pathway provides an opportunity to demonstrate the clinical effectiveness of laboratory medicine in the wider healthcare context.

This key message is becoming increasingly important given the evolving operational and political landscape driving pathology reconfiguration nationally, in order to better support quality assurance of pathology services and to promote and disseminate best practice in laboratory medicine.

Dr Phillip Monaghan
Consultant Clinical Scientist (Blood Sciences)
The Christie NHS Foundation Trust

Dr Nadeem Moghal

Scalable shared learning from error and harm: testing a model

To err is indeed human, but where can trainee doctors safely reflect on difficult situations where error may have played a part? Read on to discover an innovative approach to support shared but safe reflective learning.

Despite the efforts of regulators and employers, the confidence of professionals to be open and honest about error and harm in healthcare remains constrained. Indeed, it has been worsened by the recent Bawa-Garba case (for more information on this case see: www.bmj.com/bawa-garba).

To address this, the Royal College of Pathologists is testing a model that aims to enable safe sharing and scalable learning from error and harm. The model takes advantage of professional collegiate behaviours to secure psychological safety, drawing out stories of error and harm. It uses a well-established, free-to-all app platform (eCPD) to host stories, which are linked to questions to enable learning and reflection to be evidenced.

Anecdotal feedback on the model points to keen engagement, especially among trainees.

We are seeking to test the model with speciality bodies, starting with senior trainees, such as those at royal colleges.

The model: three tenets

Sharing and scalable – eCPD

On the eCPD app, your learning stream reflects the options you choose that are important to you. The options are specialty specific and also include areas of general interest, from national policies to quality and safety. The platform in effect connects everyone in a specialty also interested in learning from error and harm – an incident in an Aberdeen affords learning to colleagues in Plymouth. The output generates a CPD certificate of learning, which can be used to support appraisals.

Using professional agency to improve team engagement

NHS providers are in a constant struggle to encourage and support staff to reveal experiences of error and harm in their day-to-day work. Such sharing is key to building a culture of learning and reducing harm. The absence of psychological safety is a significant rate-limiting step.

Local hospital data show that doctors and other professionals, with the exception of nurses, are relatively poor reporters of incidents. The learning that would benefit staff and patients can be deliberately trapped in someone's brain (Figure 1). Even when shared through hospital governance structures, the reach remains limited to the building or trust. It is rare for the learning to reach teams across the NHS. The exceptions are the national alerts. However, even with national systems, recipients do not have easy ways to show engagement, active learning, and reflection on value to day-to-day practice.

The model streamlines the reporting process for error and harm and removes potentially limiting governance structures.

Encouraging psychological safety

Feeling psychologically safe to be open about an incident of error or harm, and the experience of being part of harming a patient, is key to maximising the learning opportunity. Hierarchies, cultures of blame, seeking accountability, and deflecting behaviours make it unsafe to be open. This is often evident in rooms of people from different disciplines addressing an incident. It is also evident within teams of doctors of different levels of seniority.

The professional will describe loyalty to their speciality body and royal college – collegiate, tribal behaviour that is anthropologically understood. The professional as an employee is in a relationship with the employer that is not collegiate, but is instead based on performance management and accountability. This generates an inherent tension: the professional's many years of autonomy and self-direction as an undergraduate and trainee is palpably constrained as an employee. The professional will always face into their agency of profession – the college – and away from their employer.

The model therefore aims to take advantage of the agency of profession and the inherent profession-facing professional to enable psychological safety. This is not to weaken the clinical governance systems in the work environment. The model aims to build confidence through practice and habit, encouraging people to reveal fully their experiences of error and harm in the work environment.

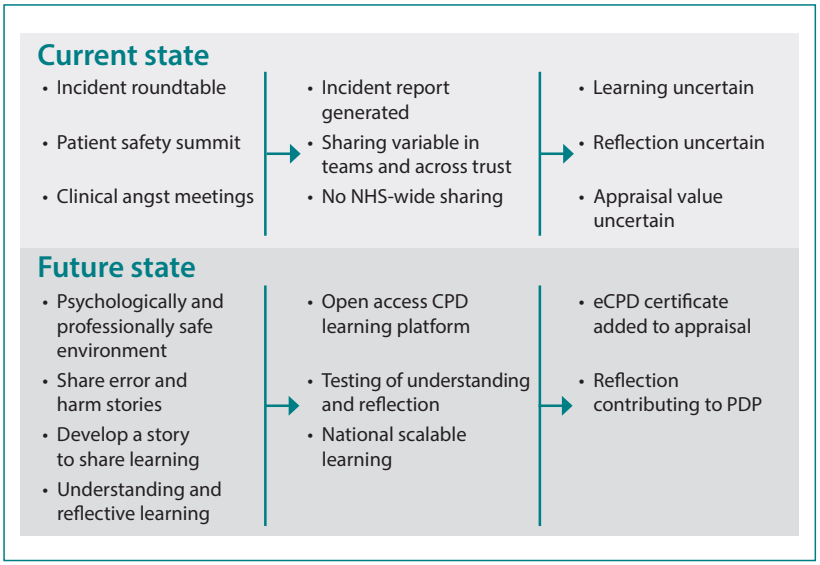


Figure 1. The current and future states of learning – moving from trapped or limited sharing to a model for sharing incidents and learning from them.

Testing: the peer tribe

The model will be tested among trainees of the same grade. Even within the tribe of medicine the hierarchies are a source of tension that impinge on psychological safety.

Conversations with trainees have suggested a keenness to engage and test and so we will be testing our model with senior trainees in the first instance.

How you can help

We are setting up senior trainee 'hackathons'. Under strict rules of mutual confidentiality, trainees gather for half a day to test the model, generate a story for learning and sharing, and log it on the eCPD platform.

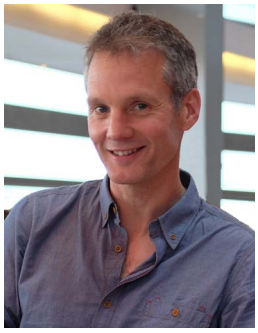
I want to connect with trainee leads of all specialities. It is a great opportunity to help us shape the way we provide a space to share learning from error and harm. At the very least, the half-day session will be peer-based learning that can be added to the Health Education England or equivalent trainee course towards the CCT.

Get in touch

I am not allergic to feedback – it is, after all, a key instrument for learning. Write to me with your feedback or thoughts on the model, even if you think it's nuts, at nadeem.moghal@rcpath.org.

Dr Nadeem Moghal
Clinical Director of Innovative Professional Learning

Getting it right first time – why it matters for pathology, pathologists and patients



Dr Tom Lewis

Dr Marion Wood

Dr Simon Knowles

Dr Martin Myers

We are all aware that there is variation in approaches to laboratory investigation. For our patients and users of the service this gives rise to variability in outcome and may contribute to suboptimal care.

What is the Getting it Right First Time (GIRFT) programme?

The stated purpose of the GIRFT programme is to improve patient care, reduce unwarranted variation and deliver best value. None of these aims are especially new or original. What makes the GIRFT programme so special is that it combines compelling comparative data with a clinically led review process that is poles apart from the usual top-down processes emanating from 'the centre'.

GIRFT worked so successfully in orthopaedics for its creator, Professor Tim Briggs, that the government has invested £60m over three years to apply the same methodology to more than 30 clinical areas. Pathology is one of these, alongside relatively straightforward procedural specialties and some more complex areas like imaging, outpatients and potentially general practice.

The orthopaedic pilot began in September 2013 and the report was published in March 2015, following visits to 205 hospitals (120 trusts). The team demonstrated some dramatic improvements in care, particularly by highlighting the inverse relationship between number of operations performed and quality of outcomes. Given its focus on knee and hip replacement surgery, the review was also able to recommend changes to prosthesis procurement that are scheduled to save many millions of pounds.

The fact that units have changed their practice, for example by reducing the number of surgeons undertaking hip revisions, is not just due to the quality of the data – it is also directly attributable to the personal nature of the intervention. Tim Briggs refers to this as 'shoulder-to-shoulder' peer review. Each GIRFT team is led by one or more senior clinicians with a wealth of experience in their field. And this seems to be delivering higher levels of change than previous programmes that have been more managerially flavoured.

What challenges might GIRFT face in pathology?

Laboratory medicine clearly differs from orthopaedic surgery in many respects. Before we get into issues such as complexity, there are two stark differences that are likely to impact on the chances of success for GIRFT in pathology. First, we are well ahead of the pack in terms of measurement and scrutiny. We've done CPA, UKAS, Keele, cancer peer review, EQA, HTA, MRHA and a whole lot more. The opportunities for 'quick wins' are fewer than in some of the clinical specialties. Second, we've been subjected to a series of top-down 'modernisation' initiatives that have, by and large, treated the laboratory as a commodity provider along the same lines as the laundry or central sterile services department. This has done little to win the hearts and minds of pathologists and laboratory staff.

Given that we are in the throes of another consolidation process, yet another initiative from the centre – even one so positively promoted as GIRFT – may not be received with unalloyed joy in most trusts. As GIRFT leads, a major early task is to convince our colleagues in the labs that we are focused exclusively on how we can improve the value of pathology for the patient and user, not simply the cost.

Then we move on to complexity. Pathology covers a series of quite disparate specialties, each using different technologies and with varying demands, from public health to personalised medicine. More importantly, though, it is difficult to directly measure the clinical effectiveness of pathology. We have traditionally used surrogates such as turnaround times and accuracy but none of these really contextualise the lab test into, for example, an effective cancer pathway or an efficient preoperative assessment.

The emphasis of the GIRFT programme is on clinical effectiveness, not process efficiency – how do we measure performance in terms of better patient outcomes rather than test accuracy or cost per test? This represents both a challenge and an unprecedented opportunity for laboratory medicine. We may finally be able to put some data behind the widely quoted yet unsubstantiated statement that pathology informs 70% of all clinical decisions.

The GIRFT pathology team

Given the challenges listed above, who was sufficiently optimistic or naive to take on the role of GIRFT lead(s) for pathology? After a lot of discussion, we decided to put in for a three-way job-share: Dr Tom Lewis (microbiologist), Dr Marion Wood (haematologist) and Dr Simon Knowles (cellular

pathologist). Our 'manifesto' was to place the focus of our work clearly in the clinical domain – upstream and downstream of the laboratory, or, in conventional terms, concentrate on the pre- and post-analytical domains.

At the same time, Dr Suzy Lishman, then College President, was arguing for the opportunity for lab staff to apply for the GIRFT lead position. To that end, Dr Martin Myers, a consultant clinical scientist (chemical pathology), was appointed as senior clinical advisor. This means we have a core team of four individuals, each working one notional day per week. Although we come from disparate laboratory backgrounds, we all have broad experience in multidisciplinary laboratory leadership and our intention is to work together across all the major laboratory specialties .

The GIRFT process

A central task of the GIRFT programme is to find, among all the data that is routinely reported up to the centre, meaningful intelligence that could be used to monitor the performance of a clinical unit without requiring busy staff to fill in yet another regular return. This is working for some of the clinical specialties but, so far, we have struggled to find data relating laboratory activity to clinical outcome. Indeed, it is likely that we may find more useful information coming out of clinical GIRFT workstreams looking at, for example, the cancer MDT, the post-take ward round or the pre-operative work-up of elective surgical patients.

Maintaining our focus on the pre- and post-analytical elements of the pathway, not straying far into primary care (which may have its own GIRFT programme very soon) and identifying useful, easily accessed measures has occupied us for the first few months of our work on the project. Each GIRFT specialty has support from a data manager who helps with identification and management of data sources, including the data-sharing agreements that are needed even between different arms of the NHS.

There are certainly some 'generic' measures that span laboratory disciplines and warrant investigation. A good example would be the percentage of tests that are never viewed by a clinician or only sighted long after their value has expired. In addition, the reasons for unwarranted variation in demand need to be understood. Naturally, this has different implications according to the particular test, but significant variation would suggest a need for further discussion with organisations at both ends of the spectrum of variability. Identifying factors that underlie 'poor' performance or lead to improvement and shared learning is part of the GIRFT modus operandi.

Progress so far

We are making gradual progress with data collection, although are likely to still be reliant on a questionnaire, which will be sent to each pathology department (apologies in advance) in order to gather some local data to give background and context to the project. The current reconfigurations make even this somewhat challenging.

The future – what to expect

From a pathology department perspective, what should you expect? The process is that nationally derived data will be built up into a trust-specific report that is sent out to each individual trust in advance of a two-hour visit from the team. Starting in mid-2019, the intention is to visit each trust once. We aim to complete all visits within 12–18 months, so it is likely that at most two of us, accompanied by a member of the support team, will come to meet you. The visit should be planned with plenty of notice to enable as many people as possible to attend, including laboratory staff and consultants, representatives from the trust executive and others who the local laboratory staff think are relevant. The visit provides an opportunity to review the data for the organisation in the context of the national picture. Some of the discussion will be led by us, but there should be opportunities for the local team to ask questions and highlight issues.

We hope to be undertaking initial 'pilot' visits to selected organisations in the first quarter of 2019. Our project manager coordinates these (as well as helping the data manager to keep us on track and arrange our regular meetings to review that data so far). At the end of the process a national report of the major findings will be compiled. It will identify best practice and make recommendations. Examples of reports from the specialties that have completed this process can be found on the GIRFT website: www.gettingitrightfirsttime.co.uk

Final thoughts

Two further things to say: the first is that GIRFT currently applies only to trusts in England. The second is to reiterate that this is about trying to improve – by reducing variability in the services we provide for our patients and users. Bringing the focus back to this through clinical leadership and away from 'bean counting' will, we hope, be a positive experience for all.

Dr Tom Lewis
Consultant Microbiologist

Dr Marion Wood
Consultant Clinical and Laboratory Haematologist

Dr Simon Knowles
Cellular Pathologist

Dr Martin Myers
Consultant Clinical Biochemist

Dr Bridget S Wilkins

Updating the College's KPIs to create key assurance indicators

How do you measure quality and safety? What indicators provide evidence of safe practice, or alert us early before problems arise? Read on to find out how the College's thinking continues to evolve.

Summary

College Council has recently agreed to publish a new set of key assurance indicators (KAIs), developed from its original key performance indicators (KPIs) and informed by extensive, profession-wide consultation. The overall number of indicators has been reduced, reflecting the strengthened governance environment afforded by accreditation of laboratory services against the ISO15189:2012 standard. The evidence required to demonstrate that a laboratory satisfies each indicator has also been refreshed and devolved; a benchmarking approach for most of the indicators is anticipated, aiming to achieve continuous quality improvement against locally agreed targets.

To complement this new suite of overarching KAIs, specialty-specific indicators are under development and will be published separately. These will include recommendations for performance targets in some areas of practice.

Introduction

KPIs were first published by the Royal College of Pathologists in May 2011. They were subsequently developed further and reissued in 2013. The operational and political landscape for the provision of laboratory diagnostic services has changed dramatically since this time, and continues to do so as a result of diverse consolidation initiatives, greater private sector involvement, increasing use of point-of-care tests and transition of laboratory services to accreditation against ISO15189:2012.

In 2014, the Pathology Quality Assurance Review (PQAR) recommended the creation of key quality assurance indicators and that the College was the most appropriate body to undertake this. There has never been resource or opportunity to conduct a full validation of the original KPI and, although many of the indicators remain useful, it was agreed by the College's Quality Assurance Management Group in 2016 that we should revisit them to consider what updating might be beneficial and where there was scope to recreate/reframe the individual indicators as KAIs, in line with the PQAR recommendation.

The Clinical Effectiveness team has therefore undertaken a revision of the College's KPIs to ensure that these remain current and are adapted, where needed, to focus on indicators that assure service quality rather than performance efficiency. In doing this, we have been able to reduce the overall number of indicators and reframe those we have retained as KAIs. To achieve this, we have paid deep attention to the quality value (benefit for service to patients) anticipated from satisfying requirements for each indicator and have conducted multiple rounds of consultation with a wide range of stakeholders over the past two years, including membership-wide consultation in spring 2018.

In parallel with this consultation, each of the Specialty Advisory and Intercollegiate Committees has been asked to provide further input into creating a limited portfolio of specialty-specific indicators that we propose to add to the main document as a suite of appendices. We anticipate that consultation on, and publication of, these specialty-specific indicators will take place as a second phase of our revision, to be completed 6–9 months after publication of the main document. We continue to welcome all members' contributions to such specialty-specific indicators. We anticipate that some or all of these indicators will include performance targets.

It also remains our aspiration to define indicators that will provide measures of the value of pathology within wider patient pathways. We shall continue working to develop such indicators through multidisciplinary discussion and collaboration.

The difference between a KPI and a KAI

The critical difference between a performance and an assurance indicator is that the former measures whether something is being done, while the latter measures whether what is being done is of appropriate quality. 'Appropriate quality' should ideally be assessed from the patient's or clinical end-user's perspective. If a KAI is met, service providers and commissioners can have confidence that the service is safe, even if a time- or volume-defined KPI is not met.

There is considerable overlap. However, we believe that the focus on quality of measures formulated as KAIs makes these generally more compelling than efficiency-focused KPIs in clinical services, where staff are highly motivated by considerations of patients' experiences. After extensive review, we believe that the agreed quality measures all justify being categorised as KAIs.

A change of approach to measurement

In undertaking this revision, we have repeatedly asked stakeholders for their views on appropriate measures to inform each indicator. In particular, we have sought opinion on adopting a benchmarking approach, linked to an intent for continuous improvement over time, rather than a pass/fail assessment represented by meeting (or not meeting) a percentage value for compliance. With some reservations about how such results will be appropriately incorporated into trust board reporting systems, we have received a balance of responses favouring benchmarking. We believe that this approach is in line with the intended outcomes of the PQAR (2014) and will act as a driver for continuous quality improvement in laboratory services. Evidence from a diversity of business contexts, including NHS activities, shows that rigid target-setting promotes 'gaming' and actually limits performance.

We have deliberately not aimed to replicate quality measures that are mandated by legislation or covered directly by requirements to comply with relevant ISO standards (e.g. ISO15189:2012, ISO 22870:2016). For many indicators, we propose that evidence to demonstrate that the indicator has been met will consist of a stated policy indicating that principles of the indicator are espoused, supported by results of regular survey/audit activities to show that the policy was followed. These will, ideally be linked to quality improvement initiatives, to confirm that the policy has been implemented with a mindset of 'if we can achieve this now, we can achieve better next year'.

It is important to note that the suggested evidence for each indicator, and the notes providing further guidance on such evidence, are advisory and not mandated. We believe that staff working on the ground know best how to identify the evidence to show that each KAI is being met for their local services; there is no 'one size fits all'. In the complex and rapidly changing healthcare environment that we face for the foreseeable future, we believe that this approach will have the added benefit of fostering local ownership and responsibility for the policies developed, the evidence collected and the quality improvement activities that will arise from these.

It is important to note that the College has no current resources to oversee validation and implementation of these indicators. We hope to collaborate with other organisations, such as the Keele Benchmarking Service, to explore the feasibility of evidence collection in relation to the new KAIs. We shall also welcome ongoing feedback from within the profession to inform future updating.

The key assurance indicators

The indicators cover six key areas of practice:

- senior staff
- training, education and innovation
- repertoire of tests and reporting of errors
- engagement with patients and users
- interpretative clinical advice and engagement with multidisciplinary teams
- timeliness of reports and clinical advice.

The indicators are listed in Table 1. It is not the purpose of this article to revisit in detail discussions that informed the changes, or the suggested evidence. A few specific KAIs are discussed at: www.rcpath.org/bulletin-jan19

A full copy of all of the membership consultation responses and the Clinical Effectiveness team's replies or actions in response to those is available on request (clinicaleffectiveness@rcpath.org).

Dr Bridget S Wilkins
Consultant Haematopathologist, on behalf of the Clinical Effectiveness team

Table 1: The College's new KAIs. For a description of all KAIs see www.rcpath.org/bulletin-jan19

1. Senior staff
KAI 1: Provision of senior staff
KAI 2: Senior staff cover
KAI 3: Senior staff handover
KAI 4: Senior staff appraisal
KAI 5: Senior staff professional development
2. Training, education and innovation
KAI 6: Staff numbers for the training of future laboratory staff
KAI 7: Quality of training for laboratory staff
KAI 8: Commitment to innovation and continuous quality improvement (CQI)
3. Repertoire of tests and reporting of errors
KAI 9: Point-of-care testing (POCT)
KAI 10: Demand optimisation
KAI 11: Incident and error reporting
4. Engagement with patients and users
KAI 12: Communication of results to patients
KAI 13: Patient experience
KAI 14: Clinical user satisfaction survey
5. Interpretative clinical advice and engagement with multidisciplinary teams
KAI 15: Availability of clinical advice at multidisciplinary team (MDT) meetings
6. Timeliness of reports and clinical advice
KAI 16: Critical and unexpected results communications
KAI 17: Response to requests for clinical advice
KAI 18: Turnaround times linked to patient pathways

National Pathology Week 2018: a round-up

Penny Fletcher

To celebrate ten years since the first National Pathology Week, we put the spotlight on pathology careers with a cross-specialty event for undergraduates in Nottingham, a schools career talk streamed on Facebook Live, and a huge range of new resources including video interviews with consultants and revamped leaflets. We also put our energy into facilitating member-led and collaborative events, including new how-to event video guides, promotional materials and a joint lecture event on the 1918 flu pandemic by leading virologist Professor John Oxford at Queen Mary University of London's Centre of the Cell.

Penny Fletcher
Public Engagement Manager

A stand at one of two of the College's NHS70 Birthday Tea Parties held in Swansea.

Careers and ideas: integrating medicine and biomedical research

Rachel Berkoff

The aim of this wonderful event was to both engage students and show them the value of pathology as a 'team sport'. One of the key takeaways: 'I learnt about the importance of pathology and its contribution to society.'

As well as the obvious need to engage students in pathology to interest them in this career path, the objective of our Careers and Ideas event, entitled Integrating Medicine and Biomedical Research, was also to convey pathology as a 'team sport'. Held at Nottingham Conference Centre and organised with the help of Professor Mark Wilkinson, the event aimed to underline both scientific and medical routes into pathology, and the necessity for them to work together in pathology in the future.

Owing to this objective, Professor Gary Middleton said during his talk that 'the fusion of medicine and science is integral to the future of biomedical research into cancer.' One of the rooms at the event held inspiring research-led talks on areas such as genetic sequencing in cancer treatment and getting accurate and consistent testing for diabetes. Parallel sessions in another room involved short careers talks, followed by audience Q&A.

Professor Kevin West delivered a tailored talk entitled 'So, what next?', in which he went through the abundance of different options in pathology (including necessary skills and aptitudes). Kevin

Group discussions at the Careers and Ideas event.

said 'if you want a career in pathology, you need an interest in people.'

The event finished with drinks and networking, which was a really great way to help the students and professionals talk comfortably and in depth about life as pathologists.

All students who filled out the evaluation survey agreed that they were more interested in pathology having attended the event. One participant commented that 'this career path is much more diverse than I first thought' and another responded saying the event 'opened up a whole new career prospect. I learnt about the importance of pathology and its contribution to society.' When asked what their favourite part was, one said it was 'talking to doctors and scientists and gaining insight into their career paths'.

The event would not have run without the great representation we had from members across our specialties, including veterinary pathology, histopathology, microbiology, haematology and chemical pathology. The volunteers rated the event 4.35/5 for 'enjoyment' in the evaluation. One wrote that the most valuable part of the day was 'arousing interest in students in a career in pathology as a scientific discipline contributing to medical standards and [the] improvement of care'.

We would like to thank the 22 volunteers who took time out of their schedule to speak at the National Pathology Week event.

Rachel Berkoff
Communications Officer

Penny Fletcher

Public lecture on World War One and the 1918 global flu pandemic

With the centenary of Armistice Day falling during National Pathology Week, the College ran a special World War One-related lecture delivered by well-known flu and pandemics expert, and eminent Fellow, Professor John Oxford.

Hidden Enemies: What was the real killer of World War 1? was a public lecture run on 8 November in collaboration with Centre of the Cell – an informal science learning centre – at Queen Mary University of London (QMUL). More than 100 people attended the event held in the Perrin Lecture Theatre at QMUL's Blizard Institute.

Following an introduction by Professor Fran Balkwill, Director of Centre of the Cell, and Professor Jo Martin, President of the Royal College of Pathologists, Professor Oxford started his talk by showing a scale model of the H1N1 virus and explaining how viruses invade human cells. He illustrated this by saying the large lecture room would be about the size of the cell in relation to the small model he held in his hand. He then went on to tell the audience how an outbreak of this tiny microbe caused more loss of life than the Great War itself, but also that the overwhelming scale of the pandemic – estimated to have caused up to 100 million deaths worldwide – must have been a result of the wider impacts of war.

Professor Oxford gave his theory on where the flu outbreak may have started: in an area of the Western Front in France where foie gras is popular, and where soldiers and locals came into lots of contact with geese (a reservoir for the flu

virus), which can mutate to infect new hosts. He explained how the combination of this, the unsanitary and overcrowded conditions of the field hospitals, and the mass movement of people at the end of the War in 1918, was the 'perfect storm' that led to so much disease and loss of life.

After Professor Oxford's fascinating lecture, audience members were given the opportunity to ask him questions. In response to questions about future pandemics, Professor Oxford was positive. He said, 'We've never had such highly rated scientists, and that reassures me.' He continued, 'This time we're ready.'

Further discussions were enjoyed over drinks and nibbles, and guests were able to find out more about pathology during World War One from some display boards used for the College's 'Blood and Bugs' roadshow (for the resources, see: www.rcpath.org/discover-pathology/events-landing-page/past-campaigns/blood-bugs.html).

The lecture event was part of Centre of the Cell's Big Question Lecture series, which offers the public, and particularly young people, the chance to hear biology experts discuss their work and question them about it. The lecture's 'big question' title was developed by members of Centre of the Cell's Youth Membership Scheme, who met with Professor Oxford and suggested the title after hearing about his work. The lecture event was recorded and will be available online very soon.

Penny Fletcher
Public Engagement Manager

Penny Fletcher

Inspiring member-led events

We launched lots of exciting new resources to help our members and supporters run their own high-quality National Pathology Week events and activities this year.

Secondary school students take part in Science Secrets of the Hospital Lab at Robert Gordon University.

We heard about some fantastic National Pathology Week events being run by members around the UK, using ideas from our new and existing resources. These included 'Living Autopsy' events inspired by our new video guides and pathology pub quizzes run by students using our downloadable quizzes revamped for 2018. The quiz resources were even used to run an event in China!

A number of these events were funded by our Public Engagement Innovation Grant scheme. This included 'Science Secrets of the Hospital Lab', run by Rebecca Wright, lecturer at the School of Pharmacy and Life Sciences at Robert Gordon University. This day of activities brought secondary school students from all across Aberdeenshire into the university labs to take part in a range of experiments as they worked to solve a clinical scenario.

Also funded by our grant scheme, an innovative project led by clinical scientists in collaboration with a playwright, actors and patients at Great Ormond Street Hospital, *Remember Remember* was an entertaining piece of theatre put on at the hospital on the Friday of National Pathology Week. A film of the play was also produced so patients who were too unwell to leave the ward could see the play.

Members of Great Ormond Street Hospital perform *Remember Remember*.

A team of students, scientists and pathologists in Exeter put on a whole week of events for their own National Pathology Week. These were held at Royal Devon and Exeter Hospital, and at a number of colleges and schools. Their project aimed to enlighten students, patients and the public on how pathology is relevant to various aspects of their own lives, particularly in the diagnosis and investigation of medical conditions. A huge number of undergraduate students took part in the week of events. As well as running interactive activities aimed at the public, a number of medical students attended a microbiology workshop led by Specialist Registrar in Medical Microbiology & Infection, Dr Matthew Powell.

To engage both members and the public in the week on social media, we also ran a social media competition, #SecretsOfTheLab, shared our new animation 'What is a pathologist?' and used video interviews with consultants from the four largest specialities to engage future generations of pathologists and scientists. At the time of writing, more than 50,000 people have viewed the animation alone.

We'd like to say a huge thank you to everyone who got involved this year. We are already looking forward to 2019, when National Pathology Week will take place from 4 to 10 November.

Penny Fletcher
Public Engagement Manager

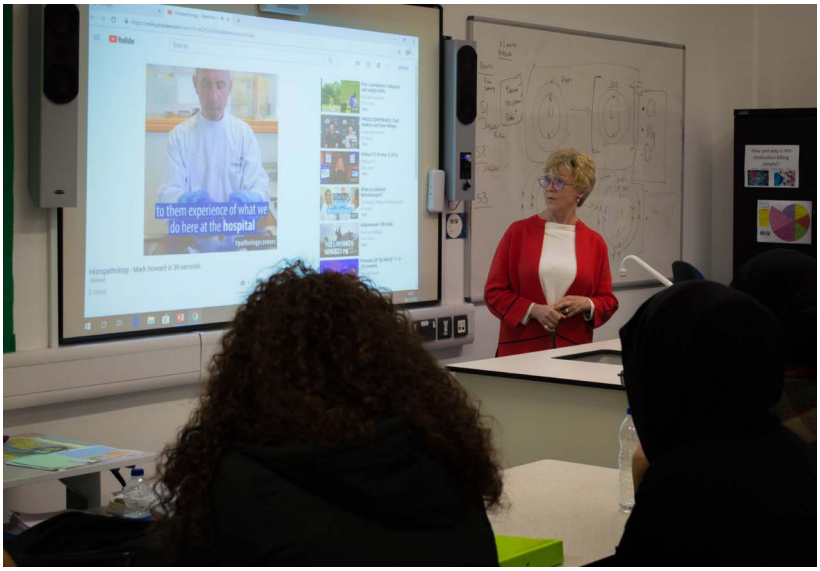
Facebook Live careers talk

Dr Lorna Williamson

During National Pathology Week, I had the privilege of presenting a talk on careers in pathology to an audience of more than 20 sixth formers at Kensington Aldridge Academy.

This academy had just returned to its former premises after a year, located hard up against Grenfell Tower, the West London residential building that burned down in 2017 killing 72 people.

I thoroughly enjoy chatting to school students, though this talk had a nerve-wracking twist: for the first time, we were broadcasting live on Facebook and Instagram.



Delivering a new talk in an unfamiliar venue with new technology and embedded videos – what could possibly go wrong? I should not have worried. Thanks to our tech-savvy Communications department I soon forgot about the multiple cameras and became absorbed in telling the story of an amazing young woman who has cystic fibrosis requiring two separate lung transplants (see our 2015/16 *Annual report*).

I showed how the College's various specialties have contributed to her care, with at least 11 of our 17 specialties involved to date. Clips from the College's new careers videos showing pathologists in action also brought the talk to life.

The students were really engaged and asked searching questions about becoming a pathologist. With around 50 people watching live, the talks have since been viewed over 1,300 times. Hopefully, we have lit a few sparks among current and future medics and scientists that pathology is an amazing career.

Dr Lorna Williamson
***Bulletin* Editor**

SMALL IS BEAUTIFUL

Know Thyself: HLA and transportation

Dr Brendan Clarke

It is hard to imagine modern medicine without the ability to transplant haemopoietic stem cells, organs and tissues. The scientific unravelling of transplant immunology led to the development of one of our newer specialties, histocompatibility and immunogenetics. Here, Dr Brendan Clarke provides an overview of his specialty.

The early years

Those with the benefit of an education in the classics will recognise the edict 'know thyself' as one of the maxims inscribed in the forecourt of the Temple of Apollo at Delphi. The notion has resonance in the context of transplantation, where the immunological discrimination of 'self' and 'non-self' drives the processes of rejection.

In the early days of transplantation the specialty was called 'tissue typing'; however, it has since been less colloquially rebranded as histocompatibility and immunogenetics (H&I). The change of name reflects expansion in the depth of knowledge and understanding, pointing to the fact that performing a transplant without full regard for the immunology of the situation sets the scene for a poor clinical outcome.

While its scientific timeline goes further back, the clinical discipline can trace its roots to the seminal observations of Peter, later Sir Peter, Medawar. Working in Oxford at the outbreak of the Second World War, Medawar performed a series of elegantly simple experiments involving skin grafts between mice of different strains. These showed that a repeat graft taken from the same donor as a first graft would be rejected in an accelerated fashion and provided evidence for a sensitisation phase of the immune response and the existence of immunologic memory. Medawar's significant contribution to the field was later recognised when he was awarded the Nobel Prize in Physiology or Medicine in 1960.

This work was followed by Peter Gorer and George Snell. Their work established that the HD2 locus in mice encoded 'major' histocompatibility antigens, which provided the target for donor tissue rejection. The human homologue of H-2 was discovered by Jean Dausset. Located on chromosome 6, the genes of the human major histocompatibility complex (MHC) code for cell surface antigens, called human leucocyte antigens (HLA). These function to stimulate an immune response and, in the context of organ transplantation, elicit a strong alloreactive response in mismatched pairings. Baruj Benacerraf, George Snell and Jean Dausset were jointly awarded the Nobel Prize in Physiology or Medicine in 1980, exactly 20 years after Medawar. Peter Gorer was ineligible to receive the accolade owing to his earlier untimely death.

As clinical transplant programmes began to develop, it was rapidly established that renal transplant patients with antecedent exposure to foreign HLA and resultant HLA antibodies were at risk for early hyperacute rejection. Noting this relationship, Ramon Patel and Paul Terasaki developed an in vitro method of assessment of compatibility by reacting donor lymphocytes with recipient serum, a method described as 'crossmatching'. This technical development paved the way for safe and increasingly successful outcomes of transplantation. It was arguably as significant a scientific contribution as the work of Medawar, albeit it was not recognised with a Nobel Prize.

Arising from these historical underpinnings, the work of an H&I lab can be broadly categorised into three areas of activity:

- HLA typing for purposes of donor-recipient matching
- recipient serum screening for detection of pre-existing HLA-directed sensitisation
- compatibility assessment of assigned donor-recipient pairs by crossmatching.

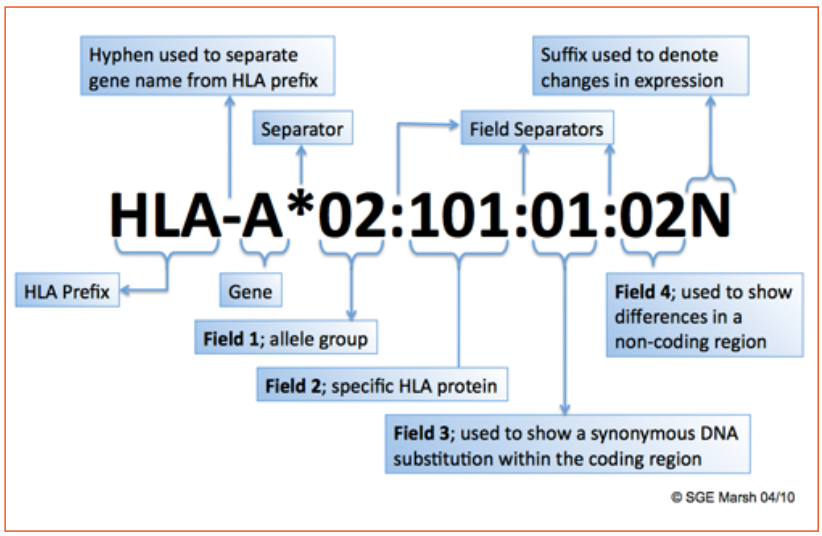


Figure 1: Nomenclature of HLA alleles. HLA: Human leucocyte antigen. Kindly provided by Professor Steven Marsh, Anthony Nolan Research Institute, London, UK (hla.alleles.org).

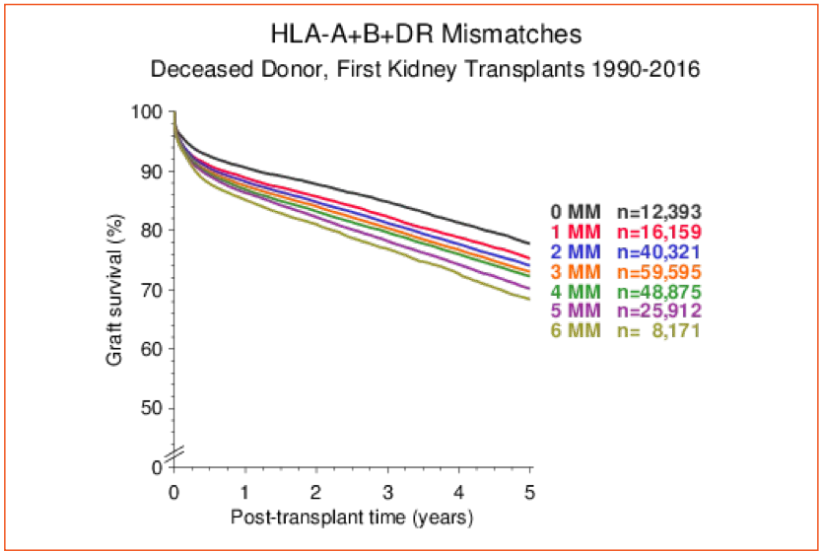


Figure 2: Renal graft survival based on HLA mismatch level. HLA: Human leucocyte antigen; MM: Mismatches. Note: With a heterozygote donor up to six antigen MM can be achieved across a three-locus type. Figure reproduced from Collaborative Transplant Study with permission (ctstransplant.org).

HLA typing

The genes of the human MHC are the most polymorphic of the human genome, with more than 18,000 allelic variants identified at the time of writing. These are individually described utilising a formal notation referencing the gene locus, the allele group, which generally corresponds to the antigenic type, and the specific variant. Figure 1 depicts these conventions.

The importance of HLA 'matching' for transplant outcome can be seen in data from both single and multicentre studies and is maintained even under cover of immunosuppression. Considering matching across HLA-A, -B and -DR loci, renal graft functional survival is cumulatively impacted by each additional mismatch, such that a more than 10% difference in outcome is manifest between best- and worst-matched grafts at five years post-transplant (Figure 2).

While serological methods were originally performed in characterisation of the cell surface antigens, these have been supplanted by DNA-level investigations. Dependent upon the clinical situation, these are configured as either low or high resolution. These provide allele group (or first field) and allele (or second field) definition, respectively. For solid organ transplantation, typing to group level meets the requirements of current UK donor sharing schemes. Arising out of the potential for rejection in two vectors (host versus graft and graft versus host), haematopoietic stem cell transplantation (HSCT; aka 'bone marrow transplantation') has more exacting requirements for matching and typing to allele level is needed.

Methodologies will differ between labs, but typically low-resolution typing will be performed using a polymerase chain reaction (PCR)-based method, usually PCR-SSP or PCR-SSOP, which utilise panels of allele group discriminatory primers or probes, respectively. High-resolution typing is usually now performed using next-generation sequencing.

HLA antibody screening

Recipients previously exposed to foreign HLA as a result of pregnancy, transfusion or previous transplantation may reflect this exposure in the form of a specific antibody profile. For reasons already given, antibody specificities directed against mismatched antigens of a donor are considered a contraindication to transplantation. In this regard, the UK deceased donor sharing scheme seeks to avoid allocation to recipients with pre-formed donor HLA-specific antibodies. This is to avoid the extension of organ ischaemia time that might otherwise occur upon shipment of the organ to a recipient later found to be crossmatch positive, possibly requiring donor reallocation and transport onwards to a recipient at a different geographic location. Implications for HSCT also arise in the form of failed or delayed engraftment.

Accordingly, the avoidance of such antibody incompatibilities represents a significant component of the work of the H&I laboratory. The British Transplantation Society guidelines identify that the sensitisation status of a patient 'wait-listed' for transplantation should be reviewed quarterly. This recognises that the profile is not static and may change over time or with any new exposures. For solid organ transplantation, the profile identified at screening is registered onto the patient record on the national transplant database to avoid incompatible donor offers from within the scheme. For patients with a very broad profile of antibody reactivity, or more limited reactivity but against antigens represented at high frequency in the donor population, the opportunity for donor offer can become vanishingly small. An index called the calculated reaction frequency, which compares the antibody profile of the patient to the HLA types of the last 10,000 donors, can be obtained. This provides an individualised estimate of the likelihood of offer.

The methodological approach to HLA antibody screening has changed significantly in recent years. The use of locally assembled or commercially sourced cell panels to determine level and identify target of reactivity has been largely replaced by solid phase systems, most usually bead-based approaches, hosted on flow platforms. These are capable of delivering high-confidence analysis that has largely enabled transplantation. However, questions exist around the very high level of sensitivity that is achieved, and whether this results in the inappropriate denial of transplant opportunity for some patients. In seeking to address this issue, most laboratories will have made an assessment of bead reactivity levels that correspond to detectable cellular reactivity and have incorporated this into their local policies for antibody reporting. Guidelines have also been developed for some organ systems that stratify bead data outputs into agreed

risk categories in an effort to ensure that transplant chance isn't affected by geography.

Longitudinal monitoring of serum reactivity enables evaluation of available donors against the derived profile and facilitates the allocation of donors with high expectation for 'offers' to lead to transplants. This outcome is, however, sometimes not achieved owing to a change in the intended recipient's serum profile of reactivity in the period since last screening or inadequacy of the screening programme.

Compatibility assessment of assigned donor-recipient pairs

On receipt of donor organs or bloods at the recipient centre, crossmatching is performed. Subject to patient history and local policy, this may be a virtual crossmatch against locally held records or a wet crossmatch performed by a complement-dependent cytotoxic (CDC) method and/or a higher sensitivity flow cytometry (FC) approach. In concept these methods are similar. Both involve reaction of donor lymphocytes with recipient sera, followed by a detection step to disclose antibody binding. For the CDC method, this is an addition of a source of complement that results in cell lysis that can be read by microscope. For the FC approach, the addition of a fluorochrome-labelled secondary antibody permits visualisation. The assays can be configured in different ways but in most instances will permit discrimination of donor-specific from autoreactive antibody and IgG from IgM reactivity. Supported by results of longitudinal serum screening, data outputs of crossmatching allow safe transplant decision-making. Most undergraduate immunology textbooks will advise that a positive crossmatch constitutes a veto to transplant. This is a very conservative position that risks the inappropriate denial of transplant opportunity. More accurately stated, a positive crossmatch that can be attributed to donor HLA-specific antibody represents a relative contraindication to transplant. Even then, a number of considerations apply and the clinical risk versus benefit evaluation may dictate different decisions in different individuals. Complex crossmatch interpretation algorithms that reference these factors have replaced the binary negative/positive outcomes of the textbook. A more contemporary view of crossmatching might be that it is a tool to identify the way in which the transplant might best be performed. Nowadays, solutions to a positive crossmatch may be found in the donor exchange scheme facilitated by the National Living Kidney Sharing Scheme or recipient desensitisation and an increasing number of recipients find their route to transplantation through such programmes.

After the transplant

The involvement of the H&I lab in patient management continues post-transplant through the monitoring for:

- de novo emergence of donor HLA-specific antibodies in solid organ transplant recipients, since this is linked to poorer outcome. Antibody monitoring can be performed by crossmatching against stored donor cells; however, it is now more usually carried out through a bead-based approach utilised pre-transplant. Schedules of testing will differ between units, with some only requesting investigations for cause (i.e. if clinically indicated) and others according to protocol at specified intervals irrespective of the patient's clinical circumstance. Options for dealing with post-transplant sensitisation are, however, limited, and although a number of modalities have been explored, consensus on treatment has yet to emerge
- engraftment of HSCT as a measure of haematopoietic and immunological recovery. Engraftment monitoring is generally performed utilising a quantitative PCR approach targeting DNA short tandem repeats that differ between the recipient and donor allowing differentiation between individual genomes and assessment of level of chimerism.

Table 1: Selected HLA associations with adverse drug reactions

Drug	HLA associated with susceptibility to hypersensitivity
Abacavir	B*57:01
Allopurinol	B*58:01
Carbamazepine	B*15:02, A*31:01

Table 2: Selected HLA disease associations

Drug	HLA association
Actinic prurigo	DRB1*04:07
Ankylosing spondylitis and related conditions	B*27
Behcet's disease	B*51
Birdshot retinopathy	A*29
Coeliac disease	DQA1*05, DQB1*02 is the primary association (DQ2), DQA1*03, DQB1*03:02 is the secondary association (DQ8)
Narcolepsy	DQB1*06:02
Rheumatoid arthritis	Principally alleles of DR4 (DRB1*04:01, 04:04, 04:05)

Note: HLA = Human leucocyte antigen. Tables reproduced with kind permission of Dr Katherine Mounsey.

Other work of H&I laboratories

Apart from work performed in support of transplant programmes, many H&I labs also deliver investigations of HLA disease association and drug hypersensitivity. Tables 1 and 2 provide details of the more commonly requested tests.

The future

What is the future of the discipline? Certainly, transplantation is an area of increasing clinical activity, with expansion of existing programmes and development of entirely new ones (such as hand, face and uterine transplant). While tissue engineering appears to offer new prospects for both organ supply and reduced immunological risk of transplantation, the reality is that there remains a distance to travel to turn research achievements into clinical realities. Problems of scalability may also limit utility. For the foreseeable future, the core service specification is likely to continue to be based around HLA typing, serum screening and crossmatching. This is not to say that developments are not occurring. Indeed, an entirely different paradigm for tissue matching is currently emerging into practice. This considers the composition of an individual's HLA type in terms of the repertoire of epitopes represented rather than as discrete and separately considered elements. The nature of the immune response to foreign HLA is also becoming better understood, in particular the role of specific cell subsets (e.g. Bmem) in modifying the rejection risk of a transplanted organ, and in some centres this research is already transitioning into clinical practice. We are also beginning to develop a more sophisticated view of HLA antibodies that considers their different effector functions and interactions.

Alongside other disciplines within the transplant multidisciplinary team, laboratories are presently working under considerable and mounting pressure to deliver results in the timeframes required by challenging national targets for transplantation. Against this background many have struggled to maintain service, most particularly in respect of provision of 24/7 cover. Solutions to these difficulties are being sought both at local and national level. These may require large-scale reconfiguration of transplant units and support services to deliver efficiencies that would permit programme growth. These matters aside, the discipline continues to offer its practitioners a rewarding involvement in an area of medicine that remains at the interface between research and routine clinical practice.

Dr Brendan Clarke
Consultant Clinical Scientist
St James's University Hospital, Leeds

Percy Oliver Memorial and Trainee Award 2019

The College's Transfusion Medicine Specialty Advisory Committee (SAC) is inviting nominations for this year's Percy Oliver Memorial Award and the Trainee Travel Bursary.

Percy Oliver Memorial Award

The Memorial Award is given to an individual who has made an outstanding contribution to the field of blood transfusion. This year, the award will be given for transfusion medicine nursing.

Nominations and accompanying citations should be submitted to the SAC for consideration by 26 May 2019 via Clare Young at the Royal College of Pathologists: clare.young@rcpath.org.

Please use the citation to describe your nominee's background, achievements and contributions to the field of blood transfusion, in no more than 750 words; furthermore, please demonstrate the impact that they have made to the field.

The Trainee Travel Bursary

The Trainee Travel Bursary is offered each spring and autumn to a value of up to £500. The bursary can be used to cover travel and accommodation costs for trainee clinicians and clinical scientists enrolled in a recognised UK training scheme and working in the field of transfusion medicine, to enable their participation in a national or international blood transfusion meeting.

Further details and an application form can be downloaded from: www.rcpath.org/profession/committees/transfusion-medicine.html and **the next deadline is 5pm on Friday 29 March 2019**.

Meet the Professionalism department

Stella Macaskill

This article introduces the small but highly effective Professionalism department. It aims to focus on linking our activities to the patient safety agenda, the College strategy and the theme of this *Bulletin*.

The College's Professionalism department is made up of the Workforce, Professional Standards and Clinical Effectiveness teams. The work of the department contributes to the College's current vision for engaged and inspired professionals delivering excellence in pathology practice for the benefit of the public. Furthermore, the department works to support members to deliver the best patient care, patient safety and quality of pathology services. The services that staff deliver feed into the College's strategic objectives for 2018–2021 by developing and maintaining high standards of pathology, promoting excellence and advancing knowledge in pathology practice, and increasing the College's influence. The whole department works closely with Dr Tim Littlewood, Vice President for Professionalism.

The Workforce team offers a consultant job description review service and College representation at advisory appointment committees (AACs) to make sure that pathologists are qualified to the appropriate standard when appointed to consultant posts in the NHS. In 2018, the team approved 450 job descriptions and provided representatives to 340 AACs. In 2019, the staff will be publishing online all of the updated consultant model job descriptions that help provide members with a clear outline of expectations of the role and a framework for NHS employers to attract suitable candidates to posts.

The Professionalism team.

The team also undertakes research and surveys the pathology workforce. The College uses this data to publish reports and papers to influence decision-makers to commission an adequate supply of pathologists with the right skills, training and expertise to ensure patient safety. We plan to do so for each pathology specialty. The Workforce team works closely with the Assistant Registrar, Dr Esther Youd.

The Clinical Effectiveness and Professional Standards teams work closely with the newly appointed Clinical Director for Safety and Quality, Dr Berenice Lopez. Please see p5–6 for more from her.

The Professional Standards team designed and maintains the easy-to-use online continuous professional development (CPD) portfolio for over 5,000 registered participants. The team accredits CPD courses for members to enable the pathology workforce to keep their skills and knowledge up to date. They manage reviews of individuals, departments and services that can be commissioned by healthcare organisations and provide formal advice to individual members, employers and external organisations on performance in pathology and medical revalidation. These activities ensure that appropriate local decisions are made to protect patient safety.

The Clinical Effectiveness team makes an important contribution to patient safety in pathology by producing clinical guidelines to the internationally recognised NICE accreditation standard, as well as coordinating pathology input into the countless guidance products published by NICE for other healthcare professionals. Promoting continuous quality improvement (CQI) and audit as a way to drive improvements in patient care and safety is an important part of their role and the team is planning a CQI Awareness Month for May 2019. The team has been working on a review of the College's key performance indicators.

None of the staff could do this without the contribution of members who volunteer their time to work to complete surveys and act as authors, expert advisors, job description reviewers and AAC representatives. Thank you.

Stella Macaskill
Director of Professionalism

Our work with All-Party Parliamentary Groups

Janine Aldridge

The College's Public Affairs Officer, Janine Aldridge, looks at the College's work with All-Party Parliamentary Groups to raise awareness and understanding of pathology among policymakers.

As part of the College's continued programme of political engagement, we have worked with all-party parliamentary groups (APPGs) to raise awareness of pathology among parliamentarians. An APPG consists of members of the House of Commons and House of Lords who join together to pursue a particular topic or interest. The groups must be open to all members of both houses, regardless of party affiliation.

Many APPGs are administered by external organisations such as charities or think tanks. Working with these groups can be a really useful way to highlight important issues and develop close working relationships. An APPG is chaired by a Member of the House of Commons who has a specific interest in the area under discussion. Their enthusiasm for the topic is often based on personal experience.

Professor Jo Martin, College President, was recently invited to join the APPG on Blood Cancer, chaired by Henry Smith MP, at its meeting on ensuring the rapid and accurate diagnosis of blood cancer. The event was held in parliament during Blood Cancer Awareness Month in September. Our Vice President Dr Tim Littlewood, a haematologist, also attended.

Professor Martin's presentation focused on a case study of a young patient's path to diagnosis and the breadth of expertise in the pathology workforce that supported him. A lymphoma patient is typically supported by an estimated 88 years of training and expertise across the pathology specialties. Professor Martin also highlighted workforce concerns and the need for greater investment in IT. We're looking forward to further collaboration with the APPG, Bloodwise – the charity that provides the secretariat – and with Blood Cancer Alliance societies.

Another area we have been exploring is the impact of artificial intelligence (AI) on pathology. It was timely, therefore, that the College's Diagnostic Digital Pathology Lead, Dr Darren Treanor, was invited to attend a roundtable discussion on AI and cancer in October. The event was organised by the APPG on Personalised Medicine. In attendance was the Parliamentary Private Secretary for Matt Hancock MP, and the Secretary of State for Health and Social Care, Alex Chalk MP. Matt Hancock has shown great interest in new technologies. He recently visited the pathology department at Leeds Teaching Hospital, which is digitally scanning all glass slide they produce, enabling sharing across multidisciplinary teams and greater collaboration and decision-making about patient treatment.

Janine Aldridge
Public Affairs Officer

Disruptive technologies: where next for pathology?

Dr Lorna Williamson

What are the game changers that will transform how we work over the next decade? A recent College conference suggested that innovation will render many current practices unrecognisable. Read on to see whether you agree.

At this wonderful two-day meeting in October, co-hosted by the College and the Association of Clinical Pathology, each presentation provided us with a new view of our future as pathologists and patients. There was even a 'Path Dragon' session, where brave inventors pitched to a panel of experts and received highly constructive advice. To make sense of it all, I have tried to distil the jaw-dropping information into some personal lessons learned.

All technologies go through phases of hype

Gartner's familiar hype cycle chart (www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-cycle-for-emerging-technologies-2018), which describes the phases of acceptance of new technologies, was referred to in several talks, with the consensus being that all examples of artificial intelligence are at the 'Peak

of Inflated Expectations', while gene therapy is now firmly on the 'Slope of Enlightenment'.

There are many new techniques in development for measuring biological markers. They need to be validated across time and between labs, and research scientists need the expertise of pathologists to guide them. Sample preparation and downstream IT continue to be important considerations.

Case studies

Case study one: mass spectroscopy combined with imaging

Kristina Schwamborn, a histopathologist from the Institute of Pathology in Munich, described mass spectrometry combined with imaging of tissue sections in a technique called 'matrix assisted laser desportion ionisation time of flight mass spectrometry'. This provides a heat map of proteins, lipids, peptides, drugs and their metabolites in tumour sections and malignant effusions, and is being validated for prostate cancer. Although she argued that this is more relevant to tumour diagnosis than genomics (why look at the caterpillar when you're really interested in the butterfly), she was honest about what this technology needs before adoption. Most biomarkers still need to be validated all the way to the clinic; the same is required for its consistency across time and between labs.

Case study two: artificial intelligence – no fear for our jobs

Artificial intelligence (AI), specifically machine learning and eventually deep learning (see glossary box on p29), can help with the shortage of pathologists, but we need not fear for our jobs. Machines will be able to learn how to help productivity in interpreting images, with workflow completely reconfigured. Algorithms can include a triage to allocate work to pathologists and also start the analysis at the same time as scanning. There is currently huge investment in AI in healthcare (around 120 million Euros in Europe alone), including in pathology. Innovate UK, the UK's innovation agency, ran a competition in the summer of 2018 for networks of digital pathology, imaging and AI – we are awaiting results.

Case study three: drugs and diagnostics for hepatitis C (HCV)

Entire care pathways will need to be reviewed to maximise the benefits of innovation. In a barnstorming delivery of the Kohn lecture, Professor Graham Foster from Queen Mary University London (QMUL) took us from first generation treatment with ribavirin and interferon (only 40% effective and with nasty side effects), to protease inhibitors and other new classes of drugs. These drugs can mean complete viral elimination after an oral course of only a few weeks, but their success will depend not only on continued virus sensitivity (looking good so far), but also on novel solutions to the 'wicked' problems standing in the way.

1. How to pay for it? Pharma companies are keen to recover their investment, so drugs are priced at £40,000–£80,000 per patient. These costs have to be met immediately, but the savings to the NHS (e.g. by avoiding liver transplantation) are accrued well into the future. NHS England, through national purchasing and novel negotiation strategies (the cheapest gets 95% of the market), have brought the price down to the point where HCV could be eliminated nationally by 2030, or even earlier.
2. How to avoid a postcode lottery? Clinicians have to prescribe drugs centrally mandated by NHS England, at an agreed 'run rate'. A case has to be made for second-line drugs, but compliance is rewarded with CQUIN payments. Regional registers record outcomes. Treatment is prioritised to those with hepatic decompensation, and then cirrhosis; there is already a drop in the number of people on the liver transplant waiting list.
3. How to reach the patients? Of the 200,000 people using drug addiction services, around 25% are HCV positive. How do we get into the community to identify those infected and treat them without a hospital visit? Could pharmacists perform a point-of-care diagnosis and prescribe the treatment? Could drug services combine this with methadone/needle exchange? In an inspiring talk, Jayne Harwood, a healthcare scientist from Newcastle-upon-Tyne, described an outreach programme where community nurses use finger-prick sampling, which is then tested by a locally validated dried blood-spot assay for HCV RNA, with sensitivity and specificity >95%. This has allowed sampling in local drug treatment centres and is being extended to local prisons. The aim is to test all people with previous high-risk behaviour once, and all drug users annually. This proves that we can teach an old test some new tricks.

Case study four: experience of a start-up to improve imaging in thrombotic stroke

Many doctors are showing skills as inventors and entrepreneurs. New career development pathways, such as NHS England's Clinical Entrepreneur Training programme, will be needed to keep these smart people in the NHS. However, there are sometimes barriers to innovation. Manoj Ramachandran, a paediatric orthopaedic surgeon from Barts Health and one of NHS Innovation's leading lights, has used machine learning to read CT scans in thrombotic strokes. Because of greater access to venture capital and easier mechanisms to commission new ways of working, this is being

developed in the USA, and the validation pathway is being designed in conjunction with the Food and Drug Administration (FDA).

Because patients need fibrinolytic treatment urgently, and large clots need removal within six hours, the scanning software notifies the neurointerventionist with images sent to her/his mobile phone, and a phone link available to the admissions team at the hospital. Although the FDA still requires the final diagnosis to be made by a person, the software now has to be included in every scanner in the USA, and 80 patients have been treated so far. The inventor considers that his background as a clinician was critical in the success of the product's development.

Case study five: gene therapy for haemophilia

A future including gene therapy is already with us. Professor John Pasi, in the Cameron Lecture, gave a most lucid and inspiring talk about the development of gene therapy for haemophilia. After more than 10 years of laboratory development by teams at University College London (Professor Amit Nathwani) and QMUL, the results of early clinical trials are quite extraordinary, with a single intra-muscular injection of a factor VIII gene cassette achieving stable levels within the normal range for months at least, rendering patients treatment-free. A total of 2,000 fVIII- and fIX-deficient patients have been treated in all trials, with no 'red flag' side effects to date. Gene therapy for sickle cell disease and thalassaemia is a real possibility, but further behind in development.

Case study six: we need people who are 'choreographers' as well as innovators

In a fascinating talk on the psychology of implementation of change, Sasha Karakusevic, from the Innovation team at NHS England, pointed out that to achieve implementation on the ground you need not only innovators and adopters, but also 'choreographers' – people who actually get things done by knowing their way round the system. People need 'agency', meaning generation of an environment where you can actually get things done, rather than new bureaucratic structures. There are moves towards interdependent leadership and 'vertical learning', e.g. where senior people look to the younger generation for IT. The role of the NHS School for Change Agents was emphasised.

Further thoughts on implementation

Disruptive technologies need good post-market surveillance and first-generation products will need to be tweaked. This came through in the talks on hepatitis C and gene therapy.

New methods of regulation will also be needed. We have tried and tested methods for assessing lab tests through CE marking and the In Vitro Diagnostics Regulations. But what about IT? There is at least as much innovation in IT as in assays: apps for patients' mobiles, apps for clinical decision support, and apps to link up with novel assays in handheld devices. Many of the new technologies will fail development. We all know it is impossible to predict which will succeed. Ideally, the role of the public sector will be to keep pointless and potentially dangerous new technologies away from patients and mandate the excellent ones.

Will complex systems leading to a diagnosis need comparison with humans in non-inferiority clinical trials? We heard that the Medicines and Healthcare products Regulatory Agency has responsibility for new IT in healthcare, but not, seemingly, for wellbeing. Companies can currently apply for CE marking to a competent body – an arrangement that currently has reciprocal recognition across the EU. But what about after Brexit, given there are only two competent bodies in the UK? Similarly, NHS England has contracted a company, Orca, to curate apps approved for use in the NHS. It is hard to see how these arrangements will cope with the number and complexity of IT systems in development. I did not come away assured that UK approval mechanisms have this under control yet.

This conference was breathtaking in scope. It will be fascinating to look back in, say, five years' time, and see which game changers are in routine use and which are as achievable as Star Trek transportation. 'Beam us up, Scottie'.

Dr Lorna Williamson
***Bulletin* Editor**

Deep learning: a quick glossary

Deep learning (DL) is a subset of machine learning (ML), which is itself a subset of AI. In ML, people define the features that the machine then uses to classify images. In DL, machines learn the feature extraction as well as classification themselves, in a process akin to neural networks. Both will be useful tools. As scale increases, DL continues to improve, whereas ML plateaus, the improvement being proportional to the scale of the neural networks achieved. Image scanning is easier for immunohistochemistry, but inventors are now trying to apply DL for hematoxylin and eosin (H&E) stain. There is a need to generate 'data lakes,' which collect huge numbers of images (annotated by pathologists) from multiple centres to create systems with optimal prediction characteristics.

6 Alie Street: a montage

Samantha Jayaram

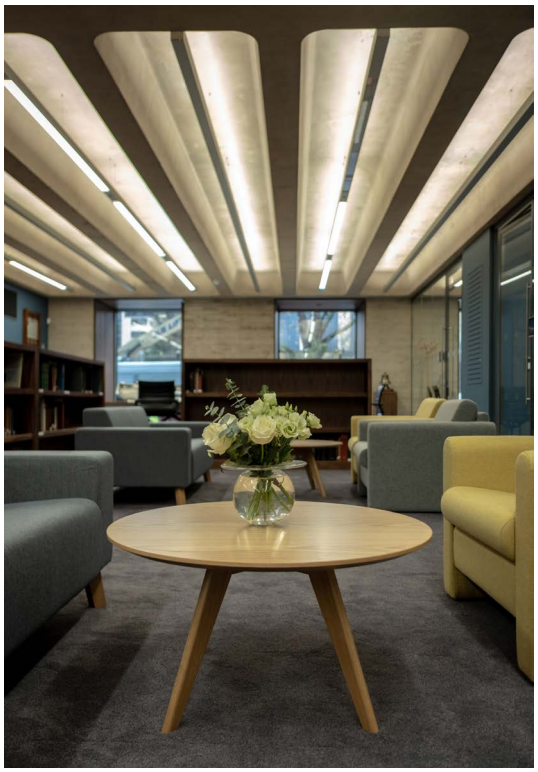
We were delighted to move to our purpose-built building at 6 Alie Street last November, which provides a hub for members, a suite of facilities for members and trainees, and office space for honorary officers and College staff.

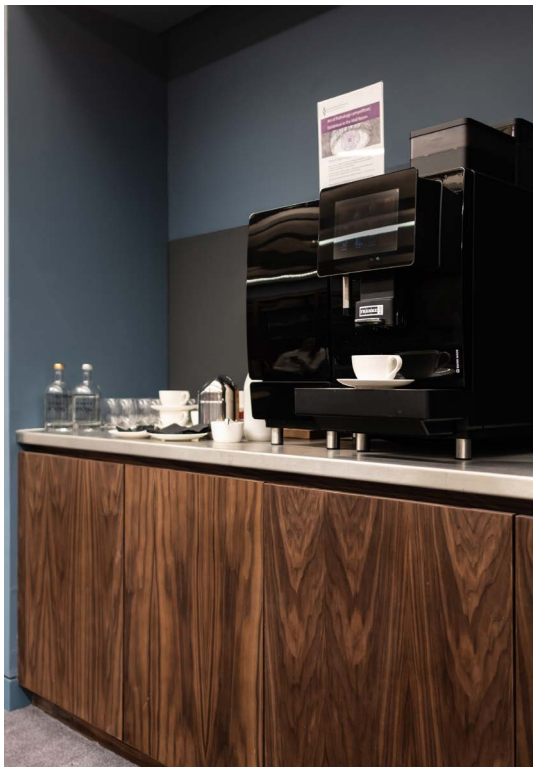
The new state-of-the-art conference facilities will enable us to run exams on-site and expand our wide-ranging programme of academic activities, events and conferences.

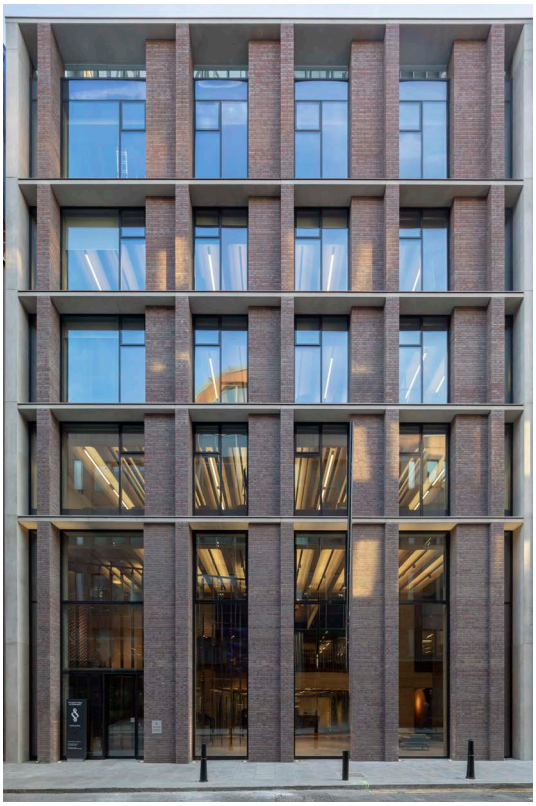
Another exciting development is the dedicated library and members' area, which houses a library managed by our Honorary Librarian and Archivist, Dr Tina Mathews. There is an informal meeting and working space, as well as three bookable meeting rooms. Free refreshments are also available.

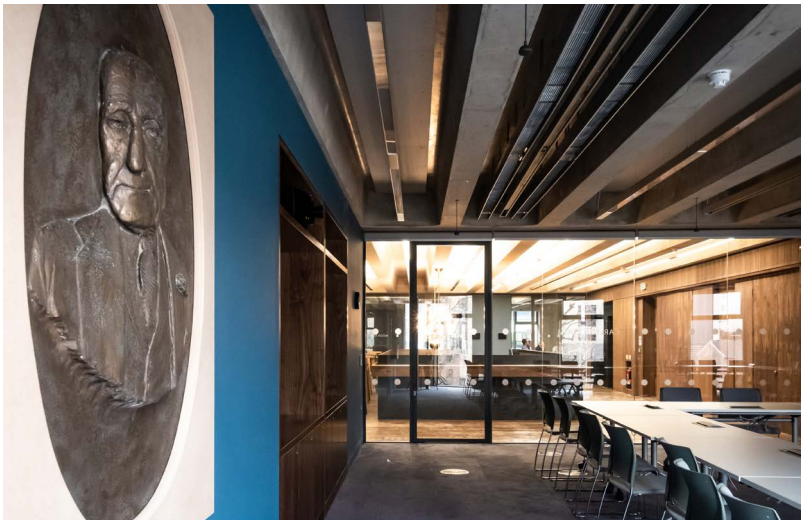
Do come and visit us – it's your College!

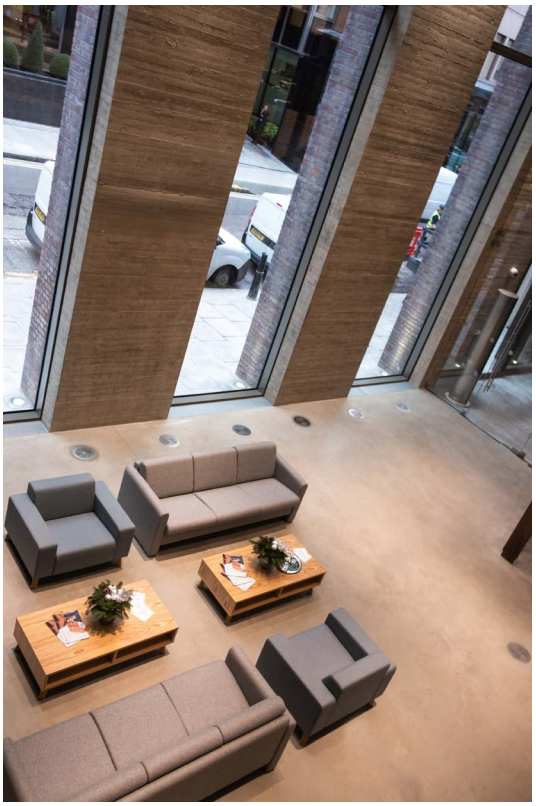
Samantha Jayaram
Press and Communications Manager

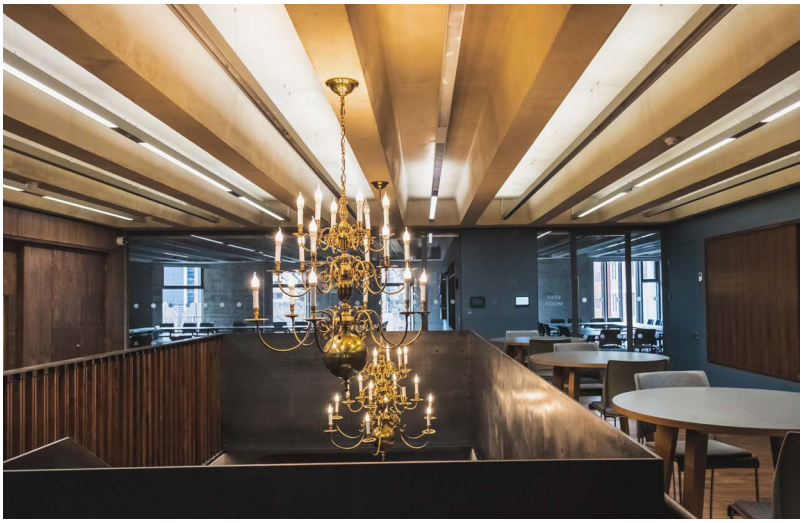






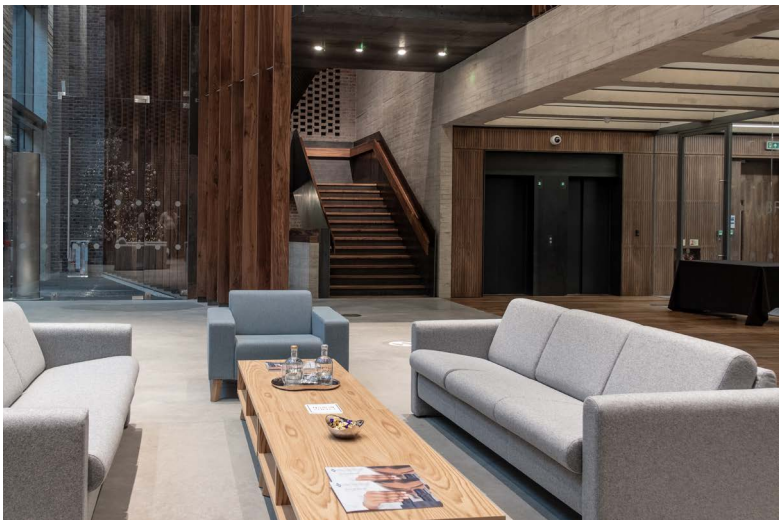






Clockwise from top left: the building's front elevation; the Carlton Room; an aerial view of the two-storey atrium; the entrance and waiting room of the College; a breakout area on the second floor, complete with College chandaliers.

Opposite, clockwise from top left, of the Library and Members' Area: an overview of the central room, complete with historic College memorabilia; the seating area; just some of the College's book collection; the complementary drinks offering.



Medical examiners announcement

Samantha Jayaram

After a long campaign by the College, a national system of medical examiners will be introduced across England and Wales in April 2019 to improve patient safety and provide much needed support for bereaved families.

The College is the lead medical royal college for medical examiners and continues to play a key role in influencing the government's work around their introduction. As well as the rollout of training, the College will be introducing a new membership package for medical examiners.

The publication of the government's response to the consultation on death certification reforms on 11 June 2018 demonstrates the ongoing commitment to the introduction of medical examiners. NHS Improvement will support the set-up of the non-statutory system for rapid progress to be made from April 2019.

Medical examiners will be employed in the NHS system, with a separate professional line of accountability, allowing for access to information in the sensitive and urgent timescales surrounding death registration but with the independence necessary for the credibility of the scrutiny process. This independence will be overseen by a National Medical Examiner, providing leadership to the system.

The National Medical Examiner will be appointed to NHS Improvement.

The introduction of medical examiners to scrutinise all non-coronial deaths will improve the quality and accuracy of the Medical Certificate of Cause of Death, national data on avoidable mortality and contribute to improved patient safety. A digital provider (Methods Analytics) has been identified and a digital solution is under development to ensure consistency of approach and a record of scrutiny by medical examiners.

The medical examiners and medical examiner officers will work with the wider system including coroners, registrars and funeral directors to provide better safeguards for the public, provide an opportunity for the bereaved to raise concerns and understand how the death is recorded, and act as a filter for the need for further investigation.

England and Wales are taking a consistent approach to the medical examiner system and the Royal College of Pathologists will provide oversight as the lead college for this professional group in both administrations.

For more information please email: deathcertification@dh.gsi.gov.uk

For more information about the role of medical examiners and for a model job description, visit: www.rcpath.org/profession/medical-examiners.html

A webinar is also available at that address. In it, Dr Alan Fletcher, Medical Examiner and Chair of the Royal College of Pathologists Medical Examiners Committee, talks about what a medical examiner does and shares information about the introduction of the new system.

Samantha Jayaram
Press and Communications Manager

The role of medical examiners

Medical examiners will be part of a national network of specifically trained independent senior doctors (from any specialty). Overseen by a National Medical Examiner, they will scrutinise all deaths that do not fall under the coroner's jurisdiction across a local area.

Medical examiners will be employed in the NHS system, with a separate professional line of accountability, allowing for access to information in the sensitive and urgent timescales surrounding death registration – but with the independence necessary for the credibility of the scrutiny process.

In order to support the training of medical examiners, a training package has been developed, including e-learning, which is available via the e-Learning for Healthcare website: www.e-lfh.org.uk/programmes/medical-examiner

Face-to-face training sessions will also be run around the country. More details will be released on the College website soon.

Regional round-up

Regional councils in Wales, England, Northern Ireland and Scotland have been proactively involved in responding to pathology issues pertaining to their areas. Below is a glimpse of some of the activities members of the regional councils have been involved in throughout the year.

Dr Jonathan Kell

Professor Kate Gould

Professor Ken Mills

Professor Peter Johnston

Wales

The Wales Regional Council (WRC) has had a productive year, predominantly working on workforce and training issues, and meeting with Assembly Members (AM), Members of Parliament and the Chief Medical Officer to gain political influence to help address the issues facing pathology in Wales.

In response to concerns regarding rota gaps, where haematology registrars were having to cover duties of core medical training (CMT) 1 and 2 positions, Dr Esther Youd, previous WRC Chair, and Dr Victoria Ware, Haematology Trainee Representative in Wales, met with the Postgraduate Dean to discuss possible solutions to this problem. The meeting was seen as an excellent opportunity to raise issues and to further enhance the dialogue between trainees and the Wales Deanery (now Health Education and Improvement Wales).

Dr Youd met with Dai Lloyd AM (Health, Social Care and Sport Committee) and had a productive discussion in relation to trainee recruitment and the importance of making Wales an attractive place for trainees to ensure recruitment and retention, while considering the future workforce in Wales. The meeting also included discussions on medical examiner implementation and equitable access to genetic testing, which Dai Lloyd AM was supportive of. Dai Lloyd AM has raised the training, recruitment and salary issue in the Welsh Assembly on two occasions since this meeting and we look forward to a formal response from the Cabinet Secretary in due course.

Dr Youd also met with Nick Thomas-Symonds MP, as a follow up to his tabled debate in the House of Commons on bowel cancer. Discussions included the impact of faecal immunochemical testing and the lower screening age on endoscopy and histopathology capacity, and how to ensure maximal gain from these improvements in bowel screening without crippling services. A number of practical solutions were discussed including increasing the number of histopathology trainees in Wales, diversifying the workforce by training clinical scientists in histopathology reporting through a properly planned and funded scheme for Wales, and investment in innovative technology and digital pathology to improve the efficiency of laboratories.

The Council has responded to a number of consultations throughout the year including the anticipated Pathology Statement of Intent from the Welsh government and feedback on the future options for biobanking. The WRC has also extensively discussed the All Wales Laboratory Information Management System and has fed back into the process on different occasions raising safety concerns. The WRC has representation on the Laboratory Services Sub-Committee of the Welsh Scientific Advisory Committee and the Academy of Medical Royal Colleges Wales.

Dr Esther Youd's term of appointment came to an end in November 2018 and she took up new roles as College's Assistant Registrar and Chair of the Academy of Medical Royal Colleges in Wales. Dr Jonathan Kell has since been elected new Chair of the WRC.

Wales Regional Council introduction

It is a great honour and privilege to be the new Chair of the WRC taking over from Esther Youd. This is an especially auspicious time to take up such a role as the College moves into its new offices on Alie Street, although anyone reading the pages of a recent edition of the *Bulletin* cannot fail to recognise the challenges that face pathology currently. This can hardly be less apparent in the devolved nations. Surely, chief among these are the recent data on the ageing workforce and chronic understaffing of many of our disciplines and units. One of the most urgent tasks facing us, particularly in Wales, is to have a firmer understanding of our current workforce and the increasing demands on our time. I hope to influence the Welsh government in planning staffing for proliferating technologies and the genetics revolution, and I will underline how radically improved informatics is an essential enabler for all of us as we face the challenge of recruiting and training the next generation.

On a more personal level, I share the concerns raised in a recent member satisfaction survey that seem to reveal a disconnect between members and College activities. The College is its members and so this is a personal message to our members in

Wales – the regional council exists for you: to hear your views, to represent you at College meetings and to bring the College to you. Please email me at Jonathan.Kell@wales.nhs.uk with concerns or observations, or follow me @NIJekyll. You might even consider joining the fantastic people who already serve on the committee. There are some vacancies and you'd be very welcome. This is your chance to influence the agenda and to increase local engagement – a theme very close to my own heart.

Dr Jonathan Kell
Chair, Wales Regional Council

England

Over the course of the year there were some changes to the focus of regional/specialty representation. The appointment of regional specialty representatives saw a shift from the previously established local College representative role, reformulating the role into a specialty-based role. This new focus will ensure there is specialty input but will also consider regional aspects that may hinder or facilitate the running and practice of pathology services across England. Continuous dialogue with members will be vital to the success of these roles.

During the England Regional Council (ERC) meeting held on 9 October 2018, Mr David Wells, NHSI Head of Pathology Services Consolidation, gave ERC members an update on the current state of the 29 pathology networks. This was a great opportunity for members to voice some of their concerns and for a dialogue to be formalised. The ERC has offered to help in appointing representatives for each of the 29 pathology networks to ensure engagement at grassroots level.

The importance of setting up a specialty network was also discussed during the ERC meeting, and regional specialty representatives are being contacted for feedback on network development and engaging communications.

Professor Kate Gould
Chair, England Regional Council

Northern Ireland

The Northern Ireland Regional Council (NIRC) is constantly on the lookout for opportunities to engage with stakeholders to help shape the future of pathology services in Northern Ireland.

The NIRC has formally submitted a response to the Northern Ireland Committee's inquiry on funding priorities in the 2018–19 budget for health. The response included a focus on the importance of addressing the reconfiguration and modernisation of services across Northern Ireland to allow for a more efficient working environment.

The response also included the NIRC's position in relation to required improvement in access to cancer treatment and drugs in Northern Ireland, which should equate to that of their counterparts elsewhere in the UK.

Following a High Court decision that plans to build a proposed waste incinerator in County Antrim had been unlawfully authorised by civil servants, we raised serious concerns that the decision could have implications for the progress of other major projects in Northern Ireland, including the development of an IT system for pathology services.

Professor Ken Mills
Chair, Northern Ireland Regional Council

Scotland

The Scotland Regional Council (SRC) has been working to further engage with stakeholders around Scotland to ensure an engaged approach to the very complex pathology services. Representatives from the Managed Diagnostic Networks – namely for clinical biochemistry, pathology, microbiology and virology – have been identified and attended SRC meetings throughout the year.

The SRC has put together a strategy paper that envisaged ways to enhance the appreciation of College activity in the Scottish context by opening more effective communication channels with members. This is particularly important in light of the increasing diversion of healthcare systems across the four nations.

SRC members have been involved with ongoing work in relation to realistic medicine, National Demand Optimisation and Shared Services workstreams, particularly with the set-up of the three regional boards. There is ongoing SRC representation on the Scottish Intercollegiate Guidelines Network and the Scottish Academy of Medical Royal Colleges, and the SRC provides support in the recruiting process for external advisers to the Academy.

Professor Peter Johnston
Chair, Scotland Regional Council

Getting involved in the regional councils

There are opportunities to get involved in the work of the regional councils. If you are interested in finding out more, please contact Jessica Zago: jessica.zago@rcpath.org.

Celebrating International Pathology Day 2018

Faaria Hussain

This year's International Pathology Day took place on 14 November and saw people from all over the world getting involved in pathology-related activities. Here we provide an overview of some of the exciting events that took place.

To mark International Pathology Day (IPD), the College partnered with *The Pathologist* to host 'Pathology Futures: The role of genomics in disease diagnosis, treatment and prevention'. The day featured a range of talks and a roundtable exploring the important role and contribution of pathologists, scientists and laboratory medicine professionals in the treatment pathway and care of patients, and how the results from research undertaken in the laboratory are directly used to develop new ways to treat patients and combat disease.

Professor Jo Martin, the College's President, introduced the day stressing the importance of IPD. Following National Pathology Week, Professor Martin stated that 'IPD is an opportunity to recognise and celebrate the contribution and important role played by pathology and laboratory medicine services in addressing global health challenges and improving the health outcomes of communities around the world.'

The first half of the day featured a range of talks, kicking off with an introduction of the day's theme: 'Genomics is the integration of the effects of multiple genes and variants, potentially the whole genome, but it starts with understanding single genes and their variants.'

The following talks then delved into deeper topics such as understanding the emergence of resistance in tuberculosis, creating new clinical pathways for whole genome sequencing, the use of AI in the implementation of BRCA testing in the care and treatment of ovarian cancer patients, and exploring the progress that is being made to incorporate genomic data into Public Health England's National Disease Registry.

The afternoon featured a roundtable discussion: 'Out of the box pathology... how the profession is helping to drive innovation in disease therapy and diagnosis.' Chaired by Professor Martin, the discussion was delivered by pathologists who have taken the less trodden career route to work on some groundbreaking discoveries and life-changing projects.

Some of the key areas the panel covered were why pathologists are particularly suited to drive innovation, how gene-editing technology will disrupt the field of pathology diagnosis, and what is the value added and the value gained for pathologists when liaising with pharmaceuticals on drug development. The roundtable was delivered to a studio audience and streamed live online, allowing global participation. We are pleased to announce you can now watch the roundtable on demand at: www.rcpath.org/international/projects/international-pathology-day-.html

The Pathology Futures 'Out of the box pathology' roundtable receive questions from the audience.

Around the world – what did you do?

Many member and non-member events took place across the world to support IPD. We are very thankful to all those who organised and attended these events to help raise awareness of the importance of pathology and shared their experiences and inspiring stories with us.

Egypt

Shefaa Al-Orman Hospital, in collaboration with the Egyptian Committee for Pathology Training, successfully ran their first IPD event in Luxor. The one-day event welcomed eight undergraduate medical students and interns from Egyptian medical schools. The day was spent in the different sections of the histopathology laboratory.

Using a combination of live demonstration sessions and presentations by pathologists and biomedical scientists, the students saw the

journey of the patient sample from accessioning into the laboratory to verifying a final diagnostic report. This gave them an opportunity to appreciate the pivotal role played by pathology in cancer patient care, and develop an understanding of the working world of pathologists and biomedical scientists.

The day ended with an open discussion with the students about the career path and challenges in the fields of histopathology and molecular pathology.

United Arab Emirates

To mark IPD, Dr Sreekala Sreehari, Country Advisor to UAE, and Mr Peter Makowski, General Manager of the NMC Royal Hospital in Abu Dhabi, arranged activities in the histopathology department. This included a talk titled: 'Effective cancer treatment begins with efficient histopathologic diagnosis'.

Social media

The hashtag #PathologyDay was used across all social media platforms to champion and celebrate the work of pathologists and laboratory medicine professionals all around the world.

Please see www.rcpath.org/discover-pathology/news/celebrating-international-pathology-day-2018.html for some of our favourite tweets.

Thank you!

We'd like to thank everyone who got involved in this year's IPD celebrations. Thank you too all the speakers, panellists, participants and organisers of the College's event and to all of you around the world who ran an event, posted on social media and helped to spread awareness. We look forward to celebrating with you again in 2019!

Faaria Hussain
International Projects Coordinator

Pathology is Global in Manchester: navigating the road towards FRCPath for overseas microbiology trainees

Dr Stephanie Thomas

Dr Shalika Palangasinghe

For overseas pathology trainees, studying towards the FRCPath examination can be exceptionally challenging. Read on to see how the South Manchester team based at Wythenshawe Hospital in microbiology have tried to help.

In preparing for the FRCPath examination in medical microbiology, navigating the nuances of UK-based antimicrobial stewardship scenarios, commonly managed infection control practices, in addition to the examination language that UK trainees take for granted, can be daunting. Without a peer group to study alongside, it can be unsurmountable.

In Manchester, we have adopted an open door approach to trainees who contact the department asking for opportunities to come and study alongside our own trainees as part of their exam preparations. Dr Shalika Palangasinghe, Dr Reham Abdelmonem and Dr Estefania Ochoa-Toasa all reached out to Wythenshawe Hospital to further their clinical training and have shared their experience of their time in Manchester. Feedback has been universally positive not only from overseas trainees, but also from our local trainees.

Our trainees greatly benefitted from their overseas counterparts through discussions about microbiology practice in different settings and clinical cases rarely seen in Manchester. The connections formed will hopefully pave the way to future collaborations. In exchange, we hope we have contributed, even in a small way, to their future successes. We hope other pathology departments will open their doors to what can only be described as a win–win situation. After all, pathology is global, or certainly can be.

Read their full stories at: www.rcpath.org/international/international-medical-science-graduates/medical-training-initiative-mti-pathology/case-studies-from-the-medical-training-initiative.html

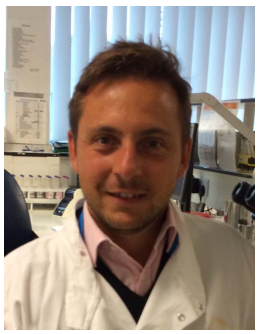
These uplifting stories are sure to inspire you. If your department is interested in finding out more about providing training to oversees trainees through the medical training initiative (MTI) scheme, please contact our International department at mti@rcpath.org.

Dr Shalika Palangasinghe, Medical Microbiologist, Sri Lanka

'Wythenshawe is a busy hospital that had many new learning opportunities for me. I gained experience of some areas that were completely new to me and worked closely with all the consultants giving me lots of exposure to multidisciplinary team working. Using the knowledge and experience gained in Manchester, I am trying to do my best to develop my local microbiology diagnostic facilities.

Dr Reham Abdelmonem

Dr Estefania Ochoa-Toasa



Dr Giorgio Calisti

My future plans are to continue to develop my knowledge through continuing medical education activities and complete the FRCPath Part 2 examination in medical microbiology in the near future, which I hope I am more prepared for after my year in the UK.'

Dr Reham Abdelmonem, Medical Microbiologist, Egypt

'I was elated when I was accepted by Wythenshawe hospital to be trained in their microbiology department. I learned the basics of antimicrobial stewardship, the value and the role of the clinical microbiologist in patient care, how to practise and apply the policies according to the updated guidelines, and moreover, the value of teamwork and the transfer of knowledge.

My next goal is to succeed in the FRCPath Part 2 in medical microbiology, which will allow me to transfer more knowledge and valued practices to my country. In addition, I hope to arrange workshops in Egypt with the Royal College of Pathologists to help my local colleagues to reach their goals also.'

Dr Estefania Ochoa-Toasa, Medical Microbiologist, Ecuador

'During my time at the Wythenshawe Hospital I saw how clinical the role of the microbiologist in the UK is and how fundamental this is to clinical diagnostics. I was actively involved in outbreak investigations and clinical audits. I saw how the multidisciplinary team is essential in order to reach goals to fight antimicrobial resistance and to prevent more infections caused by multidrug-resistant organisms.

Using my experiences from Manchester, I would like to develop new strategies for microbiology education in my home country and find ways to spread the importance of microbiology in clinical diagnostics. I am determined to continue with my education and would like to attempt the FRCPath examination.'

Dr Giorgio Calisti, Medical Microbiologist and Infectious Diseases Consultant, UK

'Having trained in two different countries myself and having had the honour of meeting Dr Reham Abdelmonem during my year at Wythenshawe Hospital, I cannot emphasise enough how useful it can be for UK trainees to work and study alongside overseas trainees.

Reham was fundamental to my success at passing the FRCPath Part 2 examination in spring 2018. I failed my previous attempt, partly because I had not found an exam revision partner at the time. Revising with Reham and making full use of all learning opportunities available were the two key factors that helped me to succeed.

For me this was a mutually enriching partnership in preparation for the FRCPath examination and a brilliant career in microbiology.'

Dr Stephanie Thomas
Dr Shalika Palangasinghe
Dr Reham Abdelmonem
Dr Estefania Ochoa-Toasa
Dr Giorgio Calisti
Department of Microbiology, Manchester University Foundation Trust

Special thanks go to:
Moira Taylor
Ibrahim Hassan
Sajjad Mirza
Mairi Cullen
Department of Microbiology, Manchester University Foundation Trust

Dr Maadh Aldouri

A Presidential visit to Jordan

Here, Dr Maadh Aldouri reports on new developments in our role to support the advancement of pathology in Jordan.

In October last year, a small delegation visited Jordan at the invitation of Professor Ismail Matalka, MENA International Regional Advisor. Professsor Matalka, who is also a former President of the International Academy of Pathology (IAP) – Arab Division, organised the XXXII Congress of the International Academy of Pathology in Amman, Jordan from 14 to 18 October 2018.

For the first time in the history of the Congress, the College delivered a session entitled 'Meet the Royal College of Pathologists' President – Professor Jo Martin'. The interactive session was well attended by more than 100 pathologists from around the world – including College fellows. Professor Martin discussed the College's priorities, new strategy, updates on the website, the new College building, and exams and training. The Q&A session was facilitated by Dr Maadh Aldouri, Clinical Director of International Activities.

Professor Matalka has also been leading on formalising a collaboration between the College and the Arab Board of Health Specializations

(ABHS). During the same visit, a meeting was held at ABHS headquarters where a Memorandum of Understanding was discussed and signed by Professor Jo Martin and Professor Mohamed Swehli, Secretary General of ABHS.

The ABHS was founded in 1978 by a Council of Arab Health Ministers with the aim of improving health services in the Arab world by raising the level of scientific and practical standards in various disciplines. The College looks forward to working closely with the ABHS and, as a first step, is looking to expand the College's International Summer School in Jordan this year.

Dr Maadh Aldouri
Clinical Director of International Activities

Ukraine scoping visit: a lay perspective

Faaria Hussain

Mary Ann Cameron

We continue to establish new partners in raising the scope and standards of pathology globally. In this article by members of the College's International team and Lay Governance Group, we report on a scoping visit to Ukraine.

In July this year, a delegation arranged by the International team conducted a project scoping visit to the Vinnytsia region in Ukraine. This followed a project proposal submitted to the College by Dr Olga Wise, consultant histopathologist and Country Advisor for Ukraine. Dr Wise is Ukrainian herself and studied medicine at the Vinnytsia Pirogov National Memorial Medical University, prior to moving to the UK to undertake her training in histopathology.

Last year, both Dr Wise and Dr Mark Howard, a consultant cellular pathologist and Country Advisor for Ukraine, visited the Regional Pathology Services in Vinnytsia and were extremely impressed with the knowledge and commitment of both the clinical and non-clinical pathology staff. However, they noted that the technical and methodological aspects of the laboratory were basic. There was a 'limited state-funded service... [and a] rudimentary level of histopathological support'.

Following this visit they approached the College to identify possible areas where the College might be able to assist in developing the pathology services through the delivery of training and mentoring in new laboratory procedures and practices. It is envisaged that this support will help to improve the quality of the laboratory testing, diagnosis and reporting. The scoping visit was conducted to discuss the possibility of establishing a 'UK-Ukraine pathology collaboration' between the College and the Ukraine's Regional Department of Health, Regional Pathology Bureau and Vinnytsia Pirogov National Memorial Medical University.

The delegation team led by Dr Monica Terizzo, a consultant histopathologist and International Regional Advisor for Europe, comprised of: Dr Wise, Dr Howard, Simon Heath, a biomedical scientist specialising in cellular pathology, Mary-Ann Cameron, Lay Member, International Committee, and Faaria Hussain, International Projects Officer.

Here, Mary Ann Cameron shares her experiences of the scoping visit.

Faaria Hussain
International Projects Officer

A lay perspective

My task, as a member of the Royal College of Pathologists' Lay Governance Group, was to give the lay perspective on one of the many international projects organised by the College's International team. I have a background in languages and can now say 'I am not a pathologist' in Ukranian.

The scoping visit aimed to identify what measures were possible and practical to include in a potential project. A day or more was spent in each of the potential collaborating institutions, talking to staff, touring the labs and watching the procedures.

The Vinnytsia Medical University has a very impressive colonnaded frontage. It is generously state-funded by the Ukraine Ministry of Education and also has income from its 5,000 students, including many from Africa, Asia and Finland. It focuses mainly on research and lecturing but also conducts a lot of private pathology tests. It is completely separate from the five hospital laboratories, which are much less well funded by the Department of Health.

This division of funding and responsibility is one of the challenges the project will face.

Both the Regional Centre for Cellular Pathology and the Regional Pathology Services are housed on huge campuses with lots of green space but the buildings date from the 1950s, with crumbling exteriors and an obvious lack of maintenance. However, the interiors are lovely and light, spotlessly clean, with large windows in each room looking out onto trees and greenery. How many path labs in the UK can boast apples, pears and grapes within easy reach of the window?

The College's team was very impressed with the quality of work in the labs and the qualifications of the staff in all the centres, but the number of tests completed daily were far fewer than in UK centres – 5,000 a year in the Regional Centre for Cellular Pathology, for example, compared to 40,000 a year in the Royal Sussex County Hospital. The main reason is, of course, the lack of machines. While the visiting team cannot wave a magic wand to provide equipment, they did notice where a number of small changes in procedure would bring significant improvements.

Dr Olga Wise, Dr Mark Howard and Simon Heath review slides of the Regional Pathology Services in Vinnytsia.

The next step is for the team to compile a list of specific short- and long-term aims and then identify the steps needed to implement change. Dr Howard was able to make the visit worthwhile for the pathologists of the Regional Pathology Services almost immediately. He noted the lab had a very impressive list of cancer markers and gave them the names of five new ones that are the same price, from the same provider company, but which are much more effective. Even this somewhat small exchange of knowledge delighted the local pathologists. They do not have access to expensive journals or international conferences so are unable to keep up to date with the latest products.

Another major achievement was dispelling the idea that the College's team had a hidden agenda. By the time we left, our hosts had accepted that the team's aim was to help and provide support. The hospital and two clinics were also looking forward to working as a triad with College support – again, a seemingly alien concept for their culture and history. The team has returned with a number of ideas to capitalise on this and smooth the path for cooperation between the university and the two clinics. The team is aware of the difficulties ahead, though – not least the cultural change needed. Approval of the Ministries of Health and Education will also be necessary.

A long-term aim is to improve standardisation and quality management to international standards. Again, the Ministries of Health and Education would need to approve and would need to provide financial support, while the College would provide information and training of key personnel. At the moment the Ukraine staff are technically excellent but do not have the experience of providing data that could be used in collaborative research.

They also are unable to access information as easily as UK pathologists for the simple reason of lack of money, both in state funding and salaries. A fully qualified pathologist in Ukraine studies for a similar length of time as a UK pathologist and the qualification is comparable to FRCPath Part 2, yet a chief pathologist earns the equivalent of only £150 per month before tax. Newly qualified pathologists earn £120 per month before tax, lab workers £100 per month. In the supermarkets, though, the prices of fresh and tinned foods are very similar to those in the UK. A UK visa is £90 and the plane fare to the UK is £250 – this is prohibitively expensive for someone wanting to come to England to attend a course, conference or sit an exam.

I was thus very impressed by the fact that the planned project is very low cost and is not expected to draw on College funds. This is true of all Global Health projects the Royal College of Pathologists is involved with. Whether in Egypt, Ghana or Moldova, money is sourced from grants from exterior bodies.

I headed for the Ukraine with some major concerns, most of which were unfounded. The mosquitoes were few, the welcome was wonderful and the food was delicious – a vegetarian and vegan paradise. The path labs were more interesting than I, as a lay person, expected. I was reassured to note that the labs smelled just the same as those I've visited in the UK – and yes, I was still the only person there to seem to be aware of it.

The country also seems to have had more invaders over the centuries than the UK, which is no mean achievement. At the moment it is emerging onto the international stage, with one eye looking over its shoulder, and this project could benefit from the cultural and political shifts Ukraine is experiencing.

Approximately 25% of the College's members live and work in more than 60 countries outside the UK, so it is obvious the College will have interests beyond these shores. Indeed, its aim is 'to strengthen the College's position as a leading international body; recognised as an exemplar of best

practice'. While the creaking of drawbridges can be heard as they are raised across the world, it is so heartening for a *Nie pathaloga* like myself to see the dedication and enthusiasm of Dr Wise and Dr Howard and the sterling organisational skills of Faaria Hussain and the International team, all working together to prove that pathology, under the auspices of the College, really is global.

Mary Ann Cameron
Lay Governance Group

Madagascar 2018

The reach of the College's international work is extensive. Read on to learn more about one of our many endeavours – a teaching and learning visit to Madagascar.

Dr Michael Osborn

I was kindly invited by the British Division of the International Academy of Pathology (BDIAP) and the Royal College of Pathologists to travel to Madagascar in September to attend the Association of Pathology of East Central & Southern Africa (APECSA) conference 2018. I was also asked to run a pre-conference teaching day for the East African British School of Pathology (EABSofP), the teaching organisation supported by the BDIAP. The organisation of these events was supported by the local pathology organisation Societe Malagache De Pathologie (SOMAPATH).

On 22 September I duly arrived in Antananarivo, the capital of and largest city in Madagascar, home to approximately 1.5 million people.

On the first day, Sunday 23 September, I met Dr Robert Lukande and Dr Francine Adriamampionona – respectively President and Chair of APECSA – at the hotel and, with other delegates, we travelled the hour across the city to the University Hospital. There, on behalf of the EABSofP, I gave three interactive lecture presentations, each followed by a slide seminar on various aspects of gastrointestinal pathology which the organisers had felt were relevant. These included infection, eosinophilic gastroenteritis and inflammatory bowel disease and its mimics. The session was well attended by 25 participants, of whom 20 were locals (16 were pathology trainees). The session was chaired by Dr Ahmed Kalebi from the East African Division of International Academy of Pathology, who was excellent at ensuring that everyone understood each other and was included in the discussion and learning experience. The session was very well received despite the slight language issue – the vast majority of the audience were French speakers.

Dr Michael Osborn with lemurs of Madagascar.

On the second day, the main APECSA 2018 conference took place, titled 'Addressing Global Health Challenges in sub-Saharan Africa: The Role of Pathology'. The meeting started with brief addresses from the conference organisers and APECSA & SOMAPATH council members, together with members of the Madagascar government's department of health and education. There was also a traditional music interlude. All of this made us feel extremely welcome and valued as delegates. The main session then began with the key note presentation from Dr George Kontogeorgos, President of the International Academy of Pathology (IAP), discussing the 'diversity of education in pathology within the frames of IAP', a most informative session with some interesting insights. Subsequent sessions were equally valuable, dealing with unnecessary pathology tests and tumour markers.

The afternoon session covered post mortems, including an excellent session from Dr Jonee Taylor, a junior Medical Examiner in New York City. Following this, Dr Taylor chaired the main afternoon BDIAP- and College-sponsored session dealing with post-mortem provision in sub-Saharan Africa, in which Professor John Obafunwa from Nigeria, Dr Rudo Mutasa from Zimbabwe and I each made a presentation on various aspects of post-mortem

provision. Together as a panel, we then answered questions from the floor. This was a very informative and interactive session and highlighted ways in which the College and the BDIAP may be able to assist our African colleagues in the future.

The third day was equally interesting, with topics ranging from comparative pathology between great apes and man and new methods for screening for breast cancer mutations.

I was unfortunately unable to attend the final day of the conference due to the constraints of travel arrangements but it dealt mainly with provision of future pathology services in Africa.

Overall, both the EABSofP pre-conference teaching day and the APECSA conference were excellent and the feedback from the organisers has been extremely positive. The members of the East African Division of International Academy of Pathology, APECSA & SOMAPATH were extremely warm and friendly, making me feel most welcome. The facilities were good and the atmosphere at the meeting very warm. Madagascar was a wonderful location – the local people are extremely welcoming and friendly. I even managed to fit in a brief visit to the zoo to meet the lemurs with Dr Ahmed Kalebi, which was a truly wonderful experience.

I would like to thank the BDIAP and the College for giving me this wonderful opportunity.

Dr Michael Osborn
Consultant Histopathologist, St Mary's Hospital

Professor Nada A S Al-Alwan

Cancer Diagnosis and Pathology Leadership Workshop with Iraq

This article describes an exciting collaboration between the College, UKAS and Iraqi decision-makers to improve laboratory quality assurance and accreditation, and hence achieve earlier diagnosis of cancers in Iraq.

Cancer is one of the major health problems in Iraq and is the second most common cause of death among the general population. Iraqi studies have illustrated that the low cancer survival rate is mainly attributable to the advanced stage of cancer at the time of presentation, resulting from late diagnosis and management. Other problems that need to be addressed to control cancer in Iraq include weak quality assurance, monitoring and evaluation systems. In order to tackle these burdens, the Iraqi Ministry of Health and the Ministry of Higher Education and Scientific Research, together with the concerned authorities, expressed a commitment to undertake all necessary actions to establish comprehensive cancer centres. These will be operated by qualified staff, through collaboration with the relevant international organisations.

Why did we hold the workshop?

I had the idea of organising a joint workshop with the College and the UK Accreditation Service (UKAS) on these topics in my role as Founding Director of the National Cancer Research Center (University of Baghdad, Iraq), and as the national coordinator of a capacity-building project sponsored by the IAEA (International Atomic Energy Agency). The aim was to enhance capabilities in diagnostic imaging, quality assurance of laboratories, radiotherapy and nuclear medicine in Iraq.

To plan the workshop, we conducted several successful meetings and video conferences in 2017 and 2018 with the College (Dr Maadh Al Douri, Clinical Director of International Activites, and Rosemary Emodi, International Manager) and UKAS (Mr Paul Stennet, Executive Director). The purpose of the workshop was to enable key policy-makers and senior leaders from both ministries in Iraq to understand and agree to implement a quality assurance laboratory programme. This could lead to international accreditation, and contribute to the development of national guidelines for the early detection of priority cancers in Iraq.

Outcomes of the workshop

During the three-day workshop in London in June 2018, this agenda was comprehensively covered and all objectives were met. The mission of the distinguished delegates was well supported by the Iraqi Embassy in the UK and fully sponsored by the IAEA. All recommendations made by participants to both ministries were approved for implementation. These included the national adoption of ISO 15189 for quality assurance and reliability of the Iraqi Pathology Teaching Laboratories, as well as collaborations with the College and UKAS through signing joint memoranda of understanding. We look forward to further achievements as the collaboration with the UK develops.

Professor Nada A S Al-Alwan
Consultant Professor of Pathology

A rapid diagnostic clinic for vague symptoms of concern

Is there still a place for clinician 'gut instinct' in modern algorithm-driven medicine? Anticipating Sir Mike Richards' proposal for rapid referral of people with possible cancers, this article describes development of an accelerated access clinic in Wales to support patients with symptoms that are vague, but where nevertheless the GP suspects underlying cancer.

Dr Gareth J Davies

Background

With a growing and ageing population, one in two people born after 1960 in the UK will develop cancer during their lifetime.[1] International benchmarking studies have shown that cancer survival in the UK is lower than in comparable countries.[2]

Denmark had a similar problem with poor cancer outcomes. Studies undertaken there suggest that one of the causes of poor outcomes is potentially avoidable delays in presentation, diagnosis and treatment, which leads to higher mortality and stage progression.[3] Over the past decade, Denmark has embarked on a number of initiatives to improve cancer diagnosis.[4,5]

The focus of improving cancer diagnosis and outcomes has been reducing the wait for those patients with specific signs or symptoms that have the highest chance of leading to a diagnosis of a specific cancer. These 'alarm' symptoms should be recognised by primary care services as soon as patients present with them, and should be referred for prompt investigation, diagnosis and, where appropriate, treatment. The National Institute for Health and Care Excellence (NICE) has recently published an update to its referral guidelines for suspected cancer; it recommends referral for cancer symptoms that have a risk of predicting a diagnosis of cancer as low as 3%.[6]

However, as recognised in Denmark, only half of patients are diagnosed via these accelerated symptom-specific pathways. Many patients present with signs and symptoms that are vague, and also consistent with benign or trivial clinical conditions. Patients with concerning but vague symptoms are often diagnosed via non-accelerated pathways and have a much longer uncoordinated journey between initial presentation and diagnosis. Multiple investigations are undertaken prior to diagnosis. This can result in delayed diagnosis, unnecessary investigations being performed and, ultimately, poor patient outcomes.

The studies of the Danish system demonstrate that for patients with such vague symptoms, if the GP had serious concerns and thought the patient may have cancer, then the patient was indeed more likely to have cancer. This is evidence that the system should support GPs' 'gut feeling' rather than just follow rigid referral pathways.

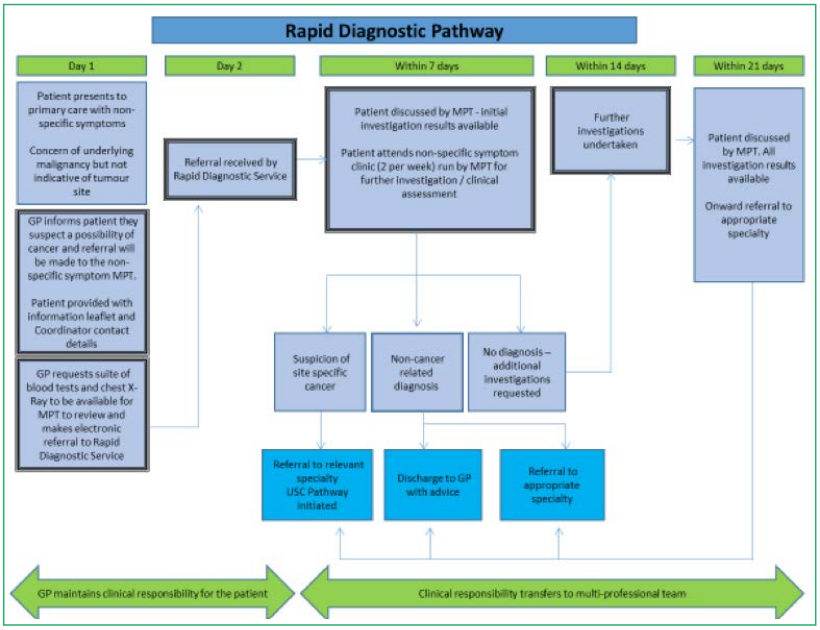


Figure 1: Patient pathway of the Rapid Diagnostic Clinic.

Service development

In 2016, a team of health professionals from Wales visited Denmark to learn from their experience. Following this, representatives of the team reviewed all Cwm Taf University Health Board (CTUHB) cancer diagnoses over a six-month period and found that only 35% of all cancers were diagnosed via the accelerated route. Planning for the development of a vague system pathway in CTUHB commenced in May 2016 and the clinic was launched in July 2017, supported by funding from the Wales Cancer Network.

The Rapid Diagnostic Clinic (RDC) concept provides rapid access to a range of diagnostic tests, conducted in one location and, when possible, one visit. A number of specialists work together to speed up diagnosis for the patient who presents to

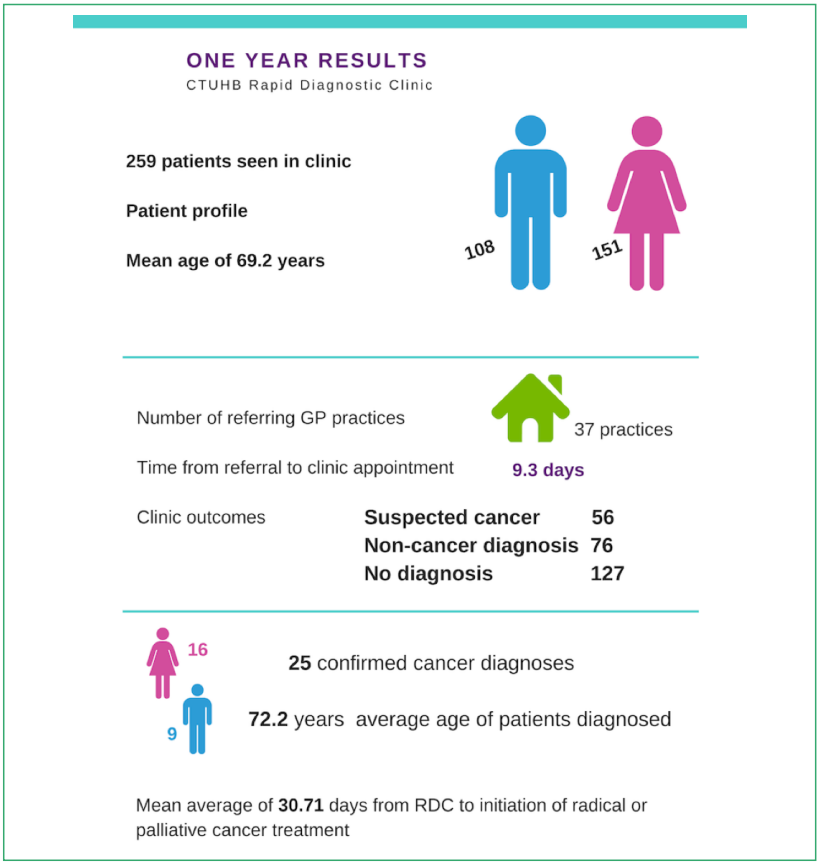


Figure 2: First year's results of CTUHB's Rapid Diagnostic Clinic.

their GP with serious non-specific symptoms that lead the GP to suspect cancer could be a root cause.

The aims include an improved patient experience for those presenting with vague symptoms, a reduction in the number of patients diagnosed with cancer via non-accelerated pathways, and a change of culture and working practice between primary and secondary care. Ultimately, when the service is embedded into the system, we would like to demonstrate an increase in the number of cancers diagnosed at stages 1 and 2, and an overall improved one-year survival rate.

Service delivery

The service operates from the Royal Glamorgan Hospital Diagnostic Hub within CTUHB. There are no specific referral criteria, except that any patients referred must be over the age of 18 and not meet the NICE criteria for an urgent suspected cancer (USC) pathway. The referral relies on GP 'gut feeling' – if the patient is experiencing non-specific symptoms and the GP has an underlying suspicion of cancer, they can be referred to the service.

At the point of referral, GPs request a suite of blood tests and a chest X-ray and all referrals are vetted carefully to ensure they are suitable and do not require redirection to a site-specific pathway. There are 15 clinic slots available per week. On attendance at the clinic, the patient will be seen by either a consultant physician or GP and undergo a physical examination, discussion of medical history and possibly a CT scan (thorax/abdomen and pelvis). The CT scan is reported live by a radiologist in the clinic, and all diagnostic tests, results and consultations are conducted in quick succession. Histopathology requests are treated urgently as for any suspected cancer. The volume of histopathology tests has not significantly increased, overall the principles of this model should mean that cancers are identified and biopsied earlier (potentially the same patients but earlier diagnoses, so potentially minimal impact on histopathology workload). Patients stay in the clinic (usually for less than two hours) until the point of diagnostic resolution, with the following outcomes possible (Figure 1):

- suspicion of cancer
- non-cancer diagnosis
- no diagnosis (but no suspicion of cancer).

Service progression and outcomes

During the first calendar year of operation (18 July 2017–17 July 2018), 75 clinic sessions were run. From onset, referrals saw a month-on-month increase throughout the year.

Figure 2 shows the performance and outcomes of the clinics across the first year.

During this period, there were 9,298 patients referred to an USC pathway in Cwm Taf, of whom 686 were treated for a cancer diagnosis, representing a 7.4% cancer conversion rate. The RDC saw 259 patients, with 25 treated for a cancer diagnosis – 10% of the total number seen by the service.

The clinic has therefore proved itself a valuable resource in detecting a higher rate of cancer than USC pathways. The three most common causes of referral were new onset weight loss, nausea and loss of appetite, and non-specific abdominal pain. The patient experience survey found that 53% of patients had been to their GP three or more times about the same symptom. This demonstrates that, prior to this initiative, there was no clear pathway for the GP to directly refer to for such patients.

Figure 3 demonstrates the clinical outcomes and summarises feedback from a patient satisfaction survey.

Reflections and conclusion

Patients who display symptoms or a combination of 'non-specific' vague symptoms that could indicate cancer as a root cause don't have an effective accelerated referral pathway. As a result, patients go back and forth between primary and secondary care, present to emergency services or fall through the gap – this leads to delays to diagnosis and potentially poor outcomes.

The RDC has demonstrated that patients with such symptoms, when recognised by primary care 'gut instinct', can benefit from this accelerated pathway with a relatively high cancer detection rate, as well as significant detection of early chronic disease.

Figure 3: Clinical outcomes and summarised feedback from a patient satisfaction survey on the Rapid Diagnostic Clinic.

For patients seen in the RDC who do not receive a diagnosis, we are following up after one year to ensure they have had their problem resolved. We are confident that with 10% of patients being diagnosed with cancer and 30% being diagnosed with another chronic condition in a coordinated accelerated manner, the clinic can demonstrate value in solving complex problems and removing multiple unnecessary visits and investigations from our healthcare system.

References at www.rcpath.org/bulletin-jan19

Dr Gareth J Davies
Associate Medical Director of the Wales Cancer Network, Cwm Taf UHB

Dr Graham Russell

Microsoft Excel as a data extraction tool for audit of minimum datasets

All guidance documents must now include a framework for audit, but these don't necessarily provide details of how to achieve this. Read on to discover one practical solution.

The histopathology archive of cancer biopsy reports is a rich source of data for audit and research. Unfortunately, much of this information is locked within pathology IT systems because minimum dataset items in the text of a report are not held within coded or searchable fields in the archive.

When we were recently asked for data on our estrogen receptor (ER) and PR positivity rates for breast cancer, our initial approach to finding this was to manually look up hundreds of individual reports and transfer the results to a spreadsheet. This was a very laborious task and a poor use of staff time. By extracting the text of standardised breast cancer reports into a spreadsheet the sophisticated formulae available in Microsoft Excel can perform a similar function in a fraction of the time.

Considerations for success

Fundamental to using this approach is the requirement for the original report to be in a standardised format used by the whole team of reporting pathologists. This has long been our local reporting practice for breast cancer cases.

If the standardised reports have each data item on a new line, searching for specific data becomes possible. However, if the report is in a free-text narrative style, then retrieval becomes problematic. Our reporting proformas allow the use of free text when essential to document additional features of an individual case, but this is in addition to the proforma data and does not impede subsequent extraction of key items.

Issues of information governance are of major importance in the storage, access and sharing of large amounts of sensitive data. Patient identifiers such as name or date of birth should be avoided in the initial data extraction. The specimen accession number is usually the most appropriate identifier to use in the download of large amounts of data. Spreadsheets can be easily password protected and

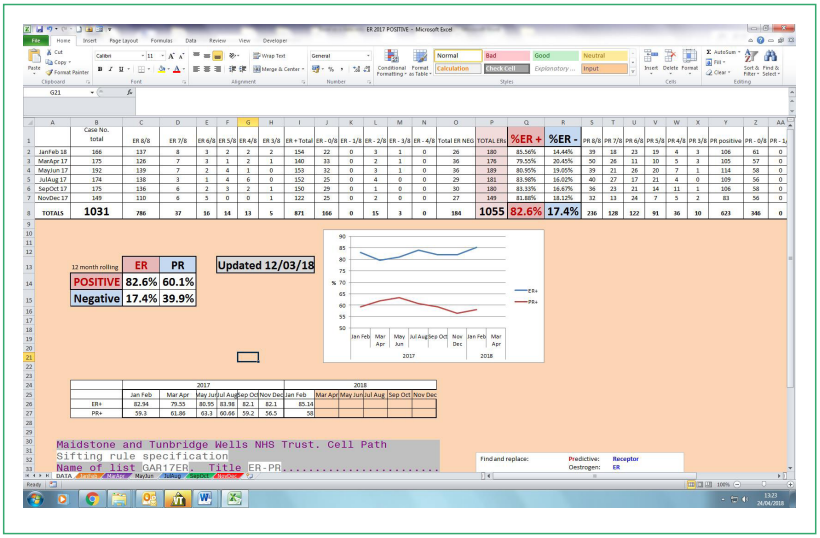


Figure 1: An example of a datasheet used to analyse data extracted from breast cancer reports.

saved in read-only formats. Individual cells can also be locked and protected from inappropriate editing.

The introduction of cancer minimum datasets has greatly enhanced the completeness of reporting of key data items, improving the quality of cancer reporting for the individual patient. By utilising the additional technology within Excel, this same data can provide important benchmarking information for pathologists, potentially to the benefit of the whole patient group. The ability to analyse a bulk archive of cancer minimum datasets is another compelling justification to promote the standardised formatting of these reports through the use of proforma-style reporting.

The Royal College of Pathologists recommends auditing the use of minimum datasets as an indicator of completeness of cancer reporting. Adopting this approach permits much more targeted scrutiny of key data items for assurance purposes and to identify or monitor outlying patterns of practice.

Further information – 'how to'

Further information on how to use Excel as an extraction tool, including designing formulae, analysing data and examples of the spreadsheets and the complex search formulae used, can be found in the 'how-to' guide on the College website: www.rcpath.org/bulletin-jan19

Dr Graham Russell
Consultant Histopathologist, Maidstone and Tunbridge Wells NHS Trust

Developments in undergraduate and foundation learning

Professor Shelley Heard

Dr Angharad Davies

Dr Richard Byers

Knowing the scientific basis of disease processes is key to diagnosing and treating patients. We also face a shortage of pathologists. Here, we report on a College initiative to increase engagement with undergraduates and foundation trainees.

Current arrangements for undergraduate medical teaching do not necessarily expose medical undergraduates to pathology as a potential career option, nor to potential consultant role models in pathology. Although there are some 'taster' and placement opportunities available for foundation trainees in some pathology specialties, there are relatively few of these and they do not necessarily have transparent and clear learning outcomes. Widespread shortages of consultants in all pathology disciplines and retirements over the next few years make engaging with undergraduates and foundation trainees more vital than ever.

As a result of these concerns, the College has developed a new strategy to help support further developments in undergraduate and foundation training in pathology. Building on the College's undergraduate curriculum (currently being updated) the strategy has three strands:

1. influencing key stakeholders
2. new careers information and advice, as well as dedicated learning resources for undergraduates and foundation trainees, reflecting an updated pathology curriculum
3. leadership and communication.

The new strategy is available at: www.rcpath.org/discover-pathology/are-you-an-undergraduate-.html

To facilitate the implementation of the strategy, three joint undergraduate/foundation leads have been appointed by the College. Together with the Vice-President of Learning and a cross-College project team, they will be responsible for:

- supporting the implementation and coordination of the Undergraduate/Foundation Education Strategy
- providing leadership and strategic development for undergraduate/foundation educational activities in the pathology specialties
- keeping up to date with changes in medical, dental, veterinary and scientific training and standards, and providing advice accordingly
- working closely with other relevant postholders to support the development and implementation of the strategy.

Some of their specific responsibilities will include:

- developing an action plan to increase engagement with foundation trainees and providing tasters in pathology – Undergraduate/Foundation Lead (Foundation), Dr Angharad Davies
- raising awareness and understanding of pathology specialties and their contribution to patient care among UK medical graduates and foundation trainees – Undergraduate/Foundation Lead (Engagement), Dr Richard Byers
- ensuring the undergraduate medical curriculum remains fit for purpose and maps to the General Medical Council's (GMC's) Outcome for Graduates (2018) and Generic Professional Capabilities Framework – Undergraduate/Foundation Lead (Education), Dr Hasan Rivzi.

In addition, the e-Learning Lead for the College, Professor Simon Cross, will be working with the three leads and other colleagues on significant e-learning resources to support learning for the undergraduate curriculum. The four leads introduce themselves here and set out their ambitions for undergraduate and foundation training in pathology.

If you would like to contribute to this initiative, please email me at shelley.heard@rcpath.org.

Professor Shelley Heard
Vice President (Learning)

Undergraduate/Foundation Lead (Foundation) – Dr Angharad Davies

I am a clinical academic microbiologist at Swansea University Medical School, where I lead on infection teaching on the graduate entry medical course. When I decided on a career in medical microbiology it was a bit of a leap in the dark. I had no first-hand knowledge of what life as a microbiologist would entail until I was lucky enough to find a junior doctor locum post to see for myself.

I am delighted to have taken on this new role with the College, focusing on how we can engage foundation trainees – who are at a crucial stage of their careers in terms of specialty recruitment – and help them confidently take that leap into pathology.

Dr Hasan Rivzi

Professor Simon Cross

Foundation posts in pathology specialties are few and far between. Junior doctors who are potentially interested frequently lack visible role models in pathology or knowledge of what the job entails. I happened to receive one teaching session from a microbiologist when I was newly qualified. This seemingly minor encounter made an impression on me – so all opportunities to engage, however small, can be worthwhile.

The College's new careers web pages are a mine of up-to-date information, and excellent work involving foundation doctors is already going on in some areas of the country. To build on this, a number of initiatives will be developed over the next few months to raise the profile of pathology among foundation doctors and to make it easier for them to access taster experiences and advice.

Undergraduate/Foundation Lead (Engagement) – Dr Richard Byers

I have been passionate about pathology since being introduced to it as an undergraduate. And I have been especially interested in the emerging role of molecular pathology in cancer diagnosis and patient management more widely, which was the main driver into pathology for me. As such, the central role of pathology in patient care, its scientific basis and the tremendous advances being made in the field have always been at the forefront of my professional life and I am very excited by the opportunity to share this with medical undergraduates via this new initiative.

I have been involved in undergraduate teaching of pathology, both didactic and research, for the past 20 years. I have facilitated development of the Undergraduate Network of the Pathological Society, which mirrors that of the College's undergraduate membership scheme. I have also been involved in hosting undergraduate pathology events nationally for several years, most notably the Pathological Society Summer School in Manchester in April this year. I also attended the College's Pathology Summer School in August and was delighted to see such enthusiasm from the students and facilitators. I look forward to working with College colleagues in running the event next year.

I will continue to work with the College and the Pathological Society to foster undergraduate interest in pathology and will bring my experience from this to help promote the range of pathology specialties. I'll do this through interaction with specialist professional societies and also by asking undergraduates what they want to see and how we can best help them to gain exposure to pathology. They often have the best ideas – and certainly the ones most appropriate and most likely to interest them.

Undergraduate/Foundation Lead (Education) – Dr Hasan Rivzi

I am a full-time NHS consultant with a keen interest in education, which has resulted in me taking up a variety of teaching/training roles across several organisations. I firmly believe that to deliver excellence in healthcare, we need to focus on achieving excellence in training, both for the current and next generation of healthcare professionals. Within the resource-limited operational landscape, we need to think innovatively to optimise output. My focus as Undergraduate/Foundation Lead for education will be to make sure our curriculum is up to date within the changing practice landscape, and that it is practical, so that it can be delivered in the little time that pathology is currently given in many undergraduate curricula.

I will be working closely with the e-Learning Lead, Professor Simon Cross, to develop content that is relevant, can be edited and updated easily, and is universally accessible to all educators and learners. The College is engaging with the GMC and the Medical Schools Council to ensure pathology has a voice in medical schools. Working as a team the three leads, led by the Vice President for Learning, will work to achieve the College's goal of reaching out to and attracting the next generation of pathologists.

e-Learning Lead – Professor Simon Cross

One possible solution to the lack of pathology teaching in many medical undergraduate courses is to provide e-learning that can be used by all UK medical students. The College has adopted a platform for e-learning for medical undergraduates and is looking to open the resource for contributions from members of the College in 2019/20. The College is using the eCPD platform that has been developed by our President, Professor Jo Martin, at Barts Health NHS Trust. The platform is simple to use and produces resources that can be used on smartphones and tablets. To look at some of the prototype modules, download the eCPD app from your smartphone or tablet's app store and search for 'thrombosis'. Each module is composed of a link to a resource on the web and then a series of questions (usually multiple choice) to reinforce learning.

The system can use any online resource with a URL, and we are exploring opportunities to develop video resources, including those created by members using slides they may already have from various lectures and talks. Initial feedback has shown that students really appreciate a clear, informal talk about a succinct topic that lasts between five and ten minutes. Once our offering has been developed, the College will provide information on its website to explain how contributors can create videos relevant to the undergraduate pathology curriculum, as well as how to use the eCPD app to create modules that link to the curriculum. We plan to begin making the e-learning modules available on a rolling basis through 2019/20.

Perceptions of histopathology among junior doctors

Dr Lorelle Brownlee

We constantly engage with trainees interested in a career in pathology. But are we doing enough to help clinical trainees get the most from their histopathology service? The results of this trainee survey may surprise you.

Compared with our clinical colleagues, histopathologists are not as visible to the public eye. However, the role of the histopathologist significantly impacts front-line clinical decisions. The media often portrays the pathologist as an autopsy specialist, and what's understood by the public about the role of the histopathologist beyond this isn't clear. We also wondered what our clinical colleagues in training think histopathologists are doing.

At Maidstone Hospital, we compiled a SurveyMonkey questionnaire and distributed it to junior doctors across four hospital sites in Kent (Maidstone Hospital, Tunbridge Wells Hospital, Darenth Valley Hospital and Medway Maritime Hospital). We surveyed trainees across all medical and surgical specialties, with training grades ranging from FY1 to ST8. We focused on numerous aspects of the histopathologist's job, including post mortems, specimen handling, report generation and training requirements.

Results

We received 40 replies to our survey. Key findings included the following:

- On average, respondents had a reasonable understanding of what percentage of histopathologists currently perform post mortems. The overall estimate by trainees was 43%, compared with 71% in a survey of 463 consultants ('The Future of the Coronial Autopsy Service' in the *Bulletin*, July 2015). However, the College's 2017 workforce survey, published after this trainee survey was carried out, shows that this number has fallen to 36%.
- When asked what would happen to a skin excision containing a suspected melanoma, 87% correctly identified the specimen processing pathway.
- When asked about immunohistochemistry, 64% knew its role in histological diagnosis.
- 86% recognised that clinical history was important for accurate histological diagnosis.
- 64% of respondents had experienced difficulty when filling out histology request forms. The most common reason was being unsure of what information was required.
- 56% didn't know the purpose of a frozen section.
- 5% were unaware that a medical degree was required for histopathology training.

Overall, we found that the level of understanding of histopathology increased according to training grade.

Discussion

We found it interesting that the trainees had a reasonably accurate picture of how many histopathologists routinely perform post mortems, particularly given our portrayal in the media. However, we found it concerning that a large proportion of trainees reported experiencing difficulties in completing histology request forms, most commonly due to not being sure what information was required. We suspect there is a breakdown in the understanding of the role of the pathologist.

A greater understanding of histopathology across all clinical specialties could improve communication of clinical information and benefit patients. We also believe that greater awareness of histopathology as a career option could increase interest in the specialty.

Final thoughts

I was given the opportunity to present the results of this survey at the Association for Medical Education in Europe (AMEE) conference in Basel, Switzerland, which is the world's largest medical education conference. Attending this event enabled me to network with dedicated medical educators from all over the globe, and I received invaluable advice.

I even had the opportunity to meet other histopathologists passionate about medical education. However, I think the most satisfying thing about presenting at AMEE was meeting medical students and junior doctors who told me they'd never considered a career in histopathology until seeing my poster. In the words of one foundation trainee: 'I didn't even know this was a thing!'

I'd like to thank Dr Rohaila Ahmed, Dr Isabel Woodman, Dr Dominic Chambers and Dr Johanna Wall for their help with this project. I'd also like to thank the Pathological Society for its generous sponsorship, which enabled me to attend this event.

Dr Lorelle Brownlee
ST3 Histopathology, UCL Cancer Institute and UCL Hospital

Undergraduate summer school

Farhaan Khan

David Egong

The fifth annual Pathology Summer School was held in August 2018 at Guy's Hospital, London. Here, three attendees discuss their impressions of the event.

This annual two-day event is open to medical students in any year of training and offers the opportunity to find out about the wide range of pathology specialties through a mixture of lectures and small-group interactive breakout sessions. The 2018 school welcomed more than 70 UK and international medical students who participated in both days.

It was funded by the following organisations:

- the Royal College of Pathologists
- the Pathological Society of Great Britain and Ireland
- the British Division of the International Academy of Pathology
- the Association of Clinical Pathologists
- the British Infection Association
- the British Society for Haematology
- the British Neuropathological Society.

We would also like to acknowledge the kind support from Clinical Aspects of Protein Assays (CAPA).

Here, three attendees describe their reactions to the event.

Pathology is fascinating in breadth and depth

The pathological basis of disease has always been emphasised throughout my medical course and has enabled me to develop a more holistic understanding of medicine and the human body. For this reason, I chose to apply and attend the Pathology Summer School. The programme conveyed to me how fascinating an area of work pathology is in its breadth as much as its depth, with immense scope for academia and pushing forward the frontiers of scientific knowledge. Ultimately, this could create paradigm shifts in the timely and effective diagnosis and management of patients.

I was able to see the variety of pathology careers offered through attending workshops in histopathology, haematology, clinical biochemistry, neuropathology and death investigation. The lecturers presenting their recent research gave an impression of how much pathologists can really change the course of clinical medicine and make a real impact on large populations. I found the ability of the discipline to interplay with other specialties very exciting, allowing for collaborative advances; for example, coordinating with public health to allow for improved infectious disease screening programmes and coordinating with surgeons to improve complete excision and recurrence rates in patients with colorectal cancer.

The Pathology Summer School allowed me to consolidate my own understanding of pathology as a career and, more importantly, re-evaluate my own inclinations towards it. I can firmly say that after having attended the summer school, I am far better informed and have greater awareness of what pathology really is. This has led to my increased interest and determination to pursue a career in pathology.

Farhaan Khan
University of Cambridge

I wish the programme lasted longer than two days

While it is almost intuitive to think that pathology is the foundation of learning processes for medical students, as we step into our clinical years, many of us are almost completely unaware of how its practice informs patient care. I was, too – until I attended the College's Undergraduate Summer School. This two-day programme made clear to me the roles of pathologists and the way they communicate their findings with other clinicians. It also provided a fun opportunity for me to put what I have learnt in medical school into practice.

The breakout sessions in the Gordon Museum (especially the pots session) were crucial in highlighting not just what I did not know, but also what I did already know. Learning how to connect the dots like a pathologist is extremely helpful for me in formulating effective questions during history-taking.

We also had a number of presentations from remarkable pathologists regarding their research and practice. They articulated their experience in such a way that I believe many of us in the audience were deeply inspired to begin our own exploration based on our interests. They also shared with us the various career pathways for aspiring pathologists. All the speakers were very engaging and we could all see just how passionate they are.

One of the highlights for attendees was the evening buffet on the 29th floor of Guy's Hospital with an astounding view over the City of London. We also had a dinner quiz. While the desire to win gave me some indigestion, it was still a lot of fun! To be honest, I wished the programme would last longer than two days. Nevertheless, I am happy to reveal that I left with a little bit more love for pathology.

David Egong
University College Cork, Ireland

An invaluable chance to meet like-minded medical students

I went to the summer school not knowing much about pathology and left with a wealth of information that has widened my understanding about different specialties in pathology and fueled an interest.

The event was well organised and informative, covering a vast amount in a short space of time. There were insights into the evolving digital technologies in the field, an interesting talk on infectious diseases, advice on maintaining a healthy work–life balance in medicine and how to get involved in the world of research.

The breakout sessions in small groups focused on different areas of pathology, tailored to individual interests. These were interactive and fun, such as learning to take a core biopsy of an apple in haematology or playing pathology bingo in immunology while working through a series of interesting case studies.

The highlight for me was exploring the fascinating specimens in the Gordon Museum of Pathology at King's College London. A breakout session provided the opportunity to go through pot by pot on particular interesting cases, being quizzed and taught by an enthusiastic pathologist. We were shown how pathologists describe samples sent to them in autopsies and come to a diagnosis. It was a great experience to have such visual, small-group teaching centred around these incredible specimens.

Over the course of the two days there were ample opportunities to speak to specialists in many pathological fields, and an invaluable chance to get to know like-minded medical students from different universities.

R. Mittal

Does the haematology lab play a role in undergraduate medical education?

Dr Sarah J Barsam

Dr Mallika Sekhar

Many of us complain that haematology trainees spend too little time in the laboratory. Read on to see how one hospital 'grabbed them early', by exposing medical students to the haematology laboratory and its role across the hospital.

Background

A pilot scheme was implemented for fourth year students of University College London (UCL) Medical School, Royal Free campus. It offered four different laboratory-based small group teaching sessions (each of three to four students) during their two-week haematology placement. The aims of the hour-long sessions were to:

- improve the haematology learning experience
- widen the repertoire of teaching methods
- enhance student awareness of the multidisciplinary laboratory as essential in holistic clinical care provision.

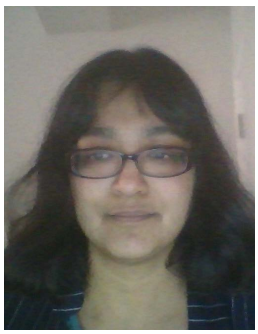
The use of laboratory sessions for teaching the understanding of disease, its investigation and treatment has not been previously systematically employed in teaching haematology.[1]

The project

Four laboratory-based teaching topics were included in the year 4 haematology placement: 'track-a-pack' blood transfusion project, laboratory aspects of transfusion, haemoglobinopathy diagnosis and morphology. The content of the teaching was based on the standard curricular recommendations.[2] Clinical teaching fellow Dr Barsam coordinated these sessions in collaboration with the medical school, the lead for undergraduate teaching and providers of laboratory services to the hospital. Students were assessed by a quiz at the beginning and end of the placement. They were also asked to provide anonymous feedback in the form of a Likert-based survey, with scores for each item ranging from zero to five.[3]

Additionally, and separate from the undergraduate teaching, an evening course was arranged for junior doctors in haematology on how best to teach the specialty to undergraduates. This consisted of an introductory talk, 'designing a short learning experience: practical tips', followed by four concurrent interactive sessions on how to teach laboratory aspects of haematology, run by experts in subspeciality fields.

The individual workshop titles were: 'using simulations and data to teach massive haemorrhage and blood product use', 'using lab data to teach haemostasis', 'using lab data for blood counts' and 'using the clinic to teach'. This course was approved by the postgraduate department of the Royal Free NHS Trust and by Health Education England as applicable for the core medical trainees and specialist haematology run-through trainees.



Dr Milly Biswas

Feedback on the scheme

Feedback on the four laboratory teaching sessions is summarised in Table 1 (see www.rcpath.org/bulletin-jan2019). The mean score of the feedback on the laboratory transfusion session was 4.23 and 85% of trainees found it 'very good', with effective and clear delivery of the teaching. The mean score for morphology was 4.67, and every student rated all aspects of this session as either 'good', 'very good' or 'excellent' (Table 1). The track-a-bag project was terminated after eight months because of persistently poor ratings, difficult logistics in tracing the patient from the bag number and relatively inefficient use of time.

The mean score of the haemoglobinopathy feedback was 3.33. Some students (4 out of 19) felt that their questions were not answered satisfactorily and that there was a need for theoretical teaching before this practical session. The specialist coagulation laboratory was transferred off site during the pilot scheme; therefore this session was terminated. The mean score for morphology was 4.67, and every student rated all aspects of this session as either 'good', 'very good' or 'excellent' (Table 1).

Doctors were offered a 'train the trainer' workshop to provide them with techniques, preparation tips, confidence and enthusiasm to teach. Feedback on the workshop was generally positive, with useful suggestions (see Table 2: www.rcpath.org/bulletin-jan2019).

Discussion

The overall aim of undergraduate medical education at UCL is to create doctors who are 'highly competent and scientifically literate clinician[s], equipped to practice person-centred medicine'. The underlying values include 'scholarship, rigour and professionalism'.[4]

The traditional educational process is based on a theory that learning is a personal, internal process requiring the environment of books, teachers and classrooms.[5] More recent learning theories recognise that knowledge results from a transaction between objective and subjective experiences in a process involving inquiry, research, creativity, decision-making and problem-solving. In order for these learning experiences to be effective the learner needs to be able to have concrete experiences, reflective observations, abstract conceptualisation and active experimentation.[5] The four laboratory-based teaching sessions focus on the transaction between learner and environment and incorporate the concepts of continuous, interactive learning.

The introduction of these laboratory-based teaching sessions has been shown to be feasible and successful among students. It adds variety to the methods of teaching and increases the interaction of students within a multidisciplinary haematology department.

Clinical teaching is an integral part of the working lives of medical staff in hospital, outlined by 'good medical practice'.[3] Additionally, it highlighted the importance of individual responsibility to teach as a vital part of every doctor's working life.[6,7] The faculty comprised Haematology Consultants and specialty trainees, biomedical scientists and transfusion practitioners. This model was made possible by departmental acknowledgement of delivery of teaching in job plans of hospital staff and contractual commitment to teaching by the laboratory provider. There has been a positive impact in feedback scores from year four trainees with ensuing stability of income generated from medical education. The haematology placement at the Royal Free Hospital now includes – and has a working model for – morphology and transfusion laboratory teaching of undergraduate medical students.

References at www.rcpath.org/bulletin-jan19

Dr Sarah J Barsam
Haematology department, Royal Free Hospital

Dr Mallika Sekhar
Consultant Haematologist, Royal Free Hospital

Dr Milly Biswas
Clinical Teaching Fellow, Haematology department, Royal Free Hospital

Professor Freddie Flynn Bursary Prizes

The College administers the Professor Freddie Flynn Bursary Prizes, which award up to four bursary prizes of up to £600 each for trainees to attend the Association for Clinical Biochemistry and Laboratory Medicine's focus meeting.

Applicants are accepted from medical or clinical scientist trainees on recognised UK training programmes in either laboratory or clinical aspects of clinical biochemistry or chemical pathology.

Details are available on the College website at: www.rcpath.org/flynnbursary

The deadline for applications is Thursday 28 February 2019.

Audit

Dr Wijitha Weerakoon

This article reports on a re-audit to review compliance with the local guideline on diagnosis and antibiotic treatment of infective endocarditis.

Original audit

Background

Infective endocarditis remains a diagnostic challenge owing to the diverse nature of clinical presentation. Delayed or missed diagnosis continues to be a problem. The University Hospitals of Derby and Burton NHS Foundation Trust's guideline on diagnosis and empirical antibiotic treatment is based on the guideline issued by the British Society for Antimicrobial Chemotherapy (BSAC) in 2012.[1] Positive blood culture results were the key factor that made microbiologists initiate further investigations to confirm the diagnosis in most of the cases.

Aims and objectives

To examine whether or not blood cultures were taken and ensure the choice of empirical and specific antibiotic therapy was guided in line with the local guideline and the minimum inhibitory concentration (MIC) of the organism was established.

Standards

The data collection proforma was based on the standards stated in the audit template published by the Royal College of Pathologists and the Trust's local guideline based on the BSAC guideline 2012.[2]

This audit included 100% compliance with the following standards:

- blood cultures should be taken within an appropriate time frame
- the appropriate number of blood culture sets should be taken
- culture-negative endocarditis should be screened using serology/polymerase chain reaction (PCR)
- empirical antimicrobial treatment should be based on severity of infection, type of valve affected and risk factors for unusual or resistant pathogens
- the MIC of the organism should be established
- dosing and serum monitoring should be done appropriately for glycopeptides and gentamicin.

Methods

Forty patients with suspected and confirmed infective endocarditis were reviewed retrospectively (January 2015–May 2015) and prospectively (May 2015–February 2016) for a period of one year.

The following patients were included: those whose blood cultures isolated an organism and were diagnosed with suspected or confirmed infective endocarditis on clinical review; and those who were given the diagnostic code for confirmed infective endocarditis on the basis of clinical criteria. Twelve patients were excluded owing to a lack of specific information.

Data was collected using electronic patient records, the laboratory information management system and the clinical notes of patients.

Results

The results of blood culture sampling can be found in Figure 1. Empirical antibiotic treatment was in line with the trust's guideline in 32 (80%) patients. Gentamicin dosage followed the guideline standard in 91% of patients who received gentamicin and 83% of patients had their serum levels monitored in accordance with the guideline. Six patients were treated empirically with glycopeptides and only four had their glycopeptide levels monitored in line with the guideline.

In 25 (96%) of the isolates, the MIC was established and was used to guide treatment.

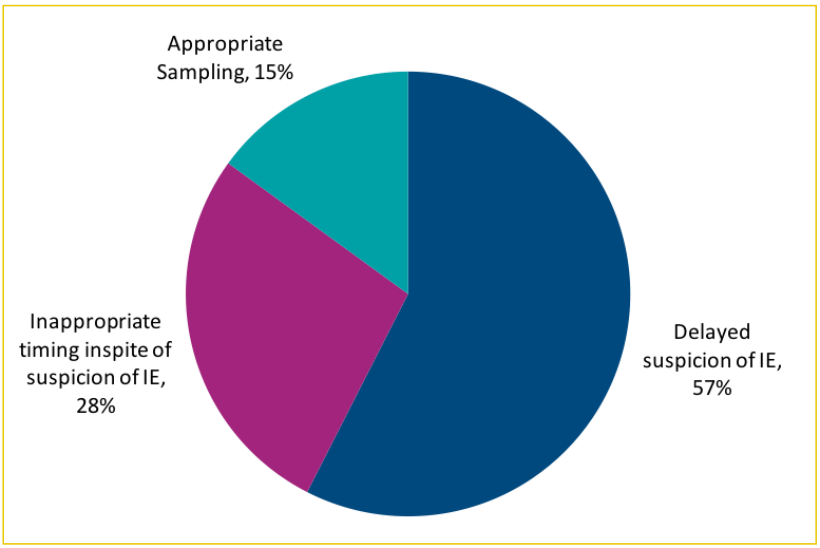


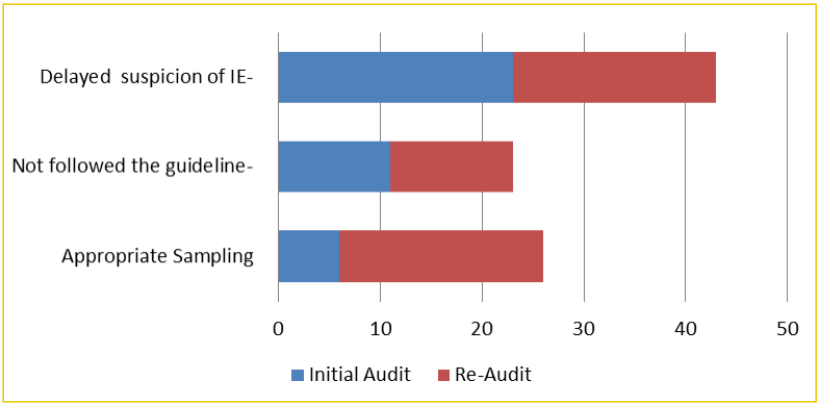
Figure 1: Blood culture sampling results from the initial audit. IE = Infective endocarditis.

Specific antibiotic treatment was in line with the guideline for all cases of staphylococcal endocarditis. Seventeen of the patients with streptococcal and enterococcal endocarditis were treated in line with the Trust's guideline; three were not. Of all the cases reviewed, five patients found to have unusual organisms (e.g. *Candida albicans*, *Haemophilus* spp, *Erysipelothrix rhusiopathiae*, *Escherichia coli* and *Citrobacter* spp) received the specific antibiotic therapy outlined in the guideline following discussion with microbiologists.

Of the nine patients who had prosthetic valve endocarditis, six (67%) received the appropriate antibiotic regimen. One patient's initial treatment was not known (they were admitted from another hospital).

Seven of the 40 patients reviewed were treated as culture-negative endocarditis. Prior antibiotic treatment or inappropriate blood culture collection was the most likely reason found in five patients. There was no clinical suspicion of rare pathogens (e.g. *Coxiella* spp, *Bartonella* spp) according to the clinical teams.

Figure 2: Comparison of blood culture sampling results from the audit and re-audit.



Discussion

Only 15% of patients with suspected infective endocarditis had their blood cultures collected in line with the guideline.

A diagnosis of suspected infective endocarditis was delayed in 57% of the patients, which indicates inappropriate blood culture collection timing and volume. However, once an organism known to cause infective endocarditis was isolated, even within a single blood culture set, a thorough clinical review was carried out by the microbiologists that directed the clinicians to further investigate patients with echocardiography.

Five of the patients were receiving antibiotics for sepsis of another origin when they were confirmed as infective endocarditis and therefore blood cultures were negative.

Empirical antibiotic therapy was in line with the guideline in 80% of patients with suspected infective endocarditis on initial assessment, which highlighted the need to re-introduce the Trust guideline to the clinical staff.

Streptococcus spp and *Enterococcus* spp were the most common aetiological organisms in this group (50%).

The timing of echocardiography and surgical management of prosthetic valve endocarditis was not reviewed in this audit since there was no local guideline.

Conclusion and recommendations

Good clinical assessment and early suspicion of infective endocarditis, which involves consideration of risk factors and blood cultures being collected in line with the Trust's guideline, are key to the timely diagnosis and appropriate antibiotic management of infective endocarditis.

The audit highlighted good practice across clinical staff and pharmacists on appropriate dosing and monitoring of the drug levels of gentamicin and glycopeptides in line with the local guideline.

Action plan

Recommendations were presented to the cardiology clinical team at a monthly education day and to the microbiology team at a regular scientific meeting.

The local guideline was updated based on the BSAC guideline[2] by Dr Wijitha Weerakoon and Dr Julia Lacey (antimicrobial pharmacist) with detailed charts on specific antibiotic treatment and additional recommendations on collection of repeat blood cultures on day seven if patients remain febrile despite antibiotic treatment.

The blood culture collection guideline was updated with clear instructions on aseptic technique and timing.

Clinical teams across the Trust were made aware of the updated guidelines through the microbiology team, antibiotic pharmacists and the infection control team.

Re-audit March 2017–March 2018

Background, aims, objectives and standards

Clinical teams noted a higher number of *Staphylococcus aureus* endocarditis during this period and a re-audit was planned with the same aims and objectives as the initial audit to review compliance with the updated 2016 local guideline. Compliance with gentamicin and glycopeptide dosing and monitoring was not included in the re-audit.

Methods

A prospective audit of 52 patients admitted with suspected infective endocarditis over a one-year period (March 2017– March 2018) was carried out. Patients were included in the sample and data was collected using the same process as in the initial audit.

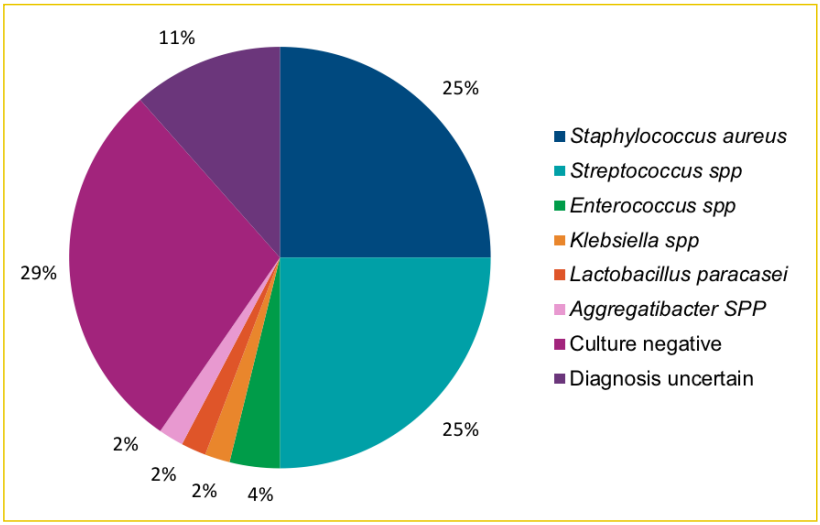


Figure 3: Pathogens causing infective endocarditis.

Results

Results of blood culture sampling compared with the initial audit are shown in Figure 2.

Compared with the initial audit, there was a 15–39% improvement in the number of blood culture samples that followed the appropriate procedure as outlined in the local guideline. The number of cases with delayed suspicion of infective endocarditis reduced from 57% to 38%.

Empirical antibiotic choice was in line with the guideline in 35 of 52 patients. Of the other 17 patients, a clinical decision not to initiate antibiotic treatment was made for four patients. Nine patients were not treated as per the guideline owing to a delay in suspicion of infective endocarditis and five of them had prosthetic heart valves. The guideline for empirical antibiotic choice was not followed in four patients (one patient had a prosthetic heart valve, the other three were treated based on the severity of sepsis).

Targeted antibiotic treatment choice for all 31 patients with culture-positive infective endocarditis was in line with the local guideline and MIC was established for the organism except in one case.

Streptococcus spp (25%) and *Staphylococcus aureus* (25%) were the most common pathogens causing endocarditis during this period (Figure 3). Blood cultures were negative in 15 of 52 (29%) patients owing to prior antibiotic therapy or unknown aetiology, and the diagnosis of infective endocarditis was made clinically and by echocardiography. In six of 52 patients (11%) who were initially suspected of having infective endocarditis, blood cultures failed to isolate an organism and the diagnosis of infective endocarditis was uncertain.

Conclusions and recommendations

Despite improved compliance with the blood culture collection guideline, further improvement is needed with thorough clinical assessment of patients with sepsis that considers risk factors such as the presence of prosthetic heart valves and history of intravenous drug use to prevent negative blood culture results owing to inappropriate antibiotic treatment.

Culture-negative screening should be considered in patients with confirmed infective endocarditis by serological or molecular methods if the pre-antibiotic blood cultures were negative despite relevant epidemiology and clinical history.

Owing to the high incidence of *Staphylococcus aureus* endocarditis in this group, it was recommended that intravenous flucloxacillin be added to the local guideline as empirical treatment for acutely ill patients with suspected infective endocarditis. This is in line with the 2015 European Society of Cardiology (ESC) guideline.[3]

I recommend re-auditing in the next year.

Action plan

The local guideline on empirical treatment was modified in July 2018 and intravenous flucloxacillin was added according to the ESC guideline following discussions with the cardiology and microbiology teams.

It was suggested to the cardiology team that regular endocarditis multidisciplinary team meetings and ward rounds in collaboration with microbiologists be initiated. Furthermore, it was recommended that awareness of early suspicion of prosthetic valve infective endocarditis be improved with consideration of risk factors and appropriate investigations.

As I have now left the trust it was agreed by the clinical lead that departmental guidelines would be implemented for microbiologists to improve culture-negative screening with serology or PCR testing on patients who meet the appropriate criteria.

References at www.rcpath.org/bulletin-jan19

Dr Wijitha Weerakoon
Consultant Microbiologist, Derby & Burton University Hospitals

International awards for UK haematologists

Dr Lorna Williamson

Like buses, awards seem to come in pairs. Or, in this case, two pairs. During 2018, two eminent UK haematologists each received two prestigious awards that recognised their huge contribution to the field.

Professor Victor Hoffbrand

Professor Victor Hoffbrand, Emeritus Professor of Haematology at University College London received the Sultan Bin Khalifa International Thalassaemia Award – the Grand International Award at the second Pan Arab Thalassaemia and Haemoglobinopathies Conference and eighth Emirates Haematology Conference in Abu Dhabi in April 2018. The award is given for a recent, significant, innovative scientific or clinical contribution in the field of thalassaemia/haemoglobinopathies.

Then, in December, Professor Hoffbrand was awarded the 2018 Wallace H. Coulter Award for Lifetime Achievement in Hematology by the American Society of Hematology (ASH). The award was in recognition of his significant contributions to haematology in research, patient care and education throughout his 55-year career. 'I am extremely honoured to receive the Wallace H. Coulter Award for Lifetime Achievement in Hematology, and I am humbled when I see the list of distinguished previous award winners,' said Professor Hoffbrand. 'I am particularly delighted to receive an award named after Wallace Coulter, since it was the ability to count blood cells that first attracted me to haematology as a scientific discipline.'

The Wallace H. Coulter Award for Lifetime Achievement in Haematology – the Society's highest honour – is named after the late Wallace H. Coulter, a prolific inventor and engineer. He is best known for developing the Coulter principle, which revolutionised the use of basic blood tests to screen for disease by making it possible to count and measure blood cells as they flow through an aperture. This award commemorates Mr Coulter's innovative spirit, visionary leadership and entrepreneurship, and is bestowed on an individual who has demonstrated lifetime achievement and leadership in education, research, mentoring and practice. ASH President Dr Alexis Thompson, of the Ann and Robert H. Lurie Children's Hospital of Chicago, presented Professor Hoffbrand with his award during the 60th ASH Annual Meeting and Exposition in San Diego, California. 'Professor Hoffbrand's text books have had a profound influence on thousands of undergraduate and postgraduate students worldwide, and through his teachings he encouraged many of us to become haematologists,' said Dr Thompson.

Professor Victor Hoffbrand

Professor Hoffbrand is celebrated for his significant contributions to education. Throughout his career, he authored and edited several leading haematology textbooks. Notably, he jointly wrote two standard undergraduate textbooks: Hoffbrand's Essential Haematology and Haematology at a Glance: Essential Haematology (now in its seventh edition, this has been translated into 15 languages). A third book, The Color Atlas of Clinical Hematology, now in its fifth edition, offers an illustrated encyclopedia of haematologic diseases, with over 3,000 images. He has also edited all seven editions of Postgraduate Haematology. His textbooks have received multiple prestigious awards and are recognised as some of the most influential books in haematology education.

Professor Hoffbrand's research interests are broad and have spanned megaloblastic anaemia, malignant haematology and iron chelation. His clinical research in iron chelation led to the licensing of the first oral chelator, deferiprone, which contributed to longer life expectancy for people with thalassaemia major. Early in his career, Professor Hoffbrand established the first reliable method of measuring red cell folate and elucidated the DNA defect in megaloblastic anemia. Later, his team

pioneered the use of biochemical, immunological and molecular markers to classify leukaemias and lymphomas, and performed early tests for minimal residual disease in acute lymphoblastic leukaemia. They also established one of the first bone marrow transplantation centres in the UK and demonstrated that T-cell depletion of donor marrow could prevent graft-versus-host disease.

Through much of his career, Professor Hoffbrand dedicated himself to training future generations of haematologists, with trainees and research fellows from 42 countries. Many of those are now heads of haematology departments around the world.

Dr Paula Bolton-Maggs

Dr Paula Bolton-Maggs, Medical Director of the Serious Hazards of Transfusion (SHOT) scheme for UK haemovigilance, received two major awards this year. It is hard to imagine a time when we did not have SHOT for the reporting of transfusion errors and major complications. In its 20-plus years, SHOT has done a huge amount to improve transfusion safety in the UK and globally, with countries such as Denmark and the Netherlands basing their reporting systems on the UK's SHOT model.

Dr Bolton-Maggs received the Medal of the International Haemovigilance Network (IHN) at its international seminar in Manchester in July. Since 2011, a special medal (showing a lion as the symbol for vigilance) is granted to a person who has made an extraordinary contribution to the work of IHN. In honouring Dr Bolton-Maggs' achievements, IHN President, Dr Erica Wood, acknowledged her contributions at national and international level through clinical work, teaching, research and advocacy, and in particular, the tremendous support that SHOT has given to international haemovigilance through its links with IHN.

Then, in October, Dr Bolton-Maggs received the Mollison Award of the British Blood Transfusion Society (BBTS). The award is named after Professor Patrick Mollison, who made huge contributions to transfusion medicine when he worked at Imperial College ('the Hammersmith' in his day) and who wrote the famous reference textbook known simply as 'Mollison'. The award is given for major contributions to the practice of clinical transfusion medicine throughout the recipient's career.

The citation describes Dr Bolton-Maggs as a dedicated, hugely committed individual with enormous expertise and interest in clinical transfusion practice, who has made a lasting contribution to the education, development and delivery of safe and effective transfusion practice in the UK and beyond. It goes on to say that 'she has been a first-class leader and advocate for haemovigilance in her years with SHOT, consistently delivering high quality resource material that can be used to support key safety messages. This is reflected in the recent safety notices issued by the Department of Health and Social Care, and the Welsh government, which recommend the use of a final checklist at the patient's side. This is a recommendation that has been pioneered by SHOT for several years, and indeed data from SHOT has been referenced in the background to the safety notices.'

Dr Bolton-Maggs said, 'I was delighted to be honoured by both the IHN and BBTS. It has been very stimulating working with SHOT for the last seven years, and good to expand the horizon in new directions.'

Clockwise from left: Dr Bolton-Maggs accepts the Mollison Award of the British Blood Transfusion Society; Dr Bolton-Maggs receives the Medal of the International Haemovigilance Network (IHN); the Medal of the IHN.

Deaths reported to Council

The deaths of the following Fellows were announced at the November 2018 Council meeting. We extend our condolences to those who grieve for them.

Paola Domizio	UK	Catherine Helen Roberts	UK
Michael Patrick Joseph McIntyre	UK	Neville Keith Shinton	UK

Appreciation: Professor Hugh Pirie

Hugh Pirie, who died on 14 June 2018 at the age of 82 after a short illness, was a world-renowned investigative veterinary pathologist. He was Emeritus Professor of Systematic Veterinary Pathology at the University of Glasgow, where he spent most of his career.

Hugh was born in Glasgow and educated at Coatbridge High School. A distinguished student, he graduated Bachelor of Veterinary Medicine and Surgery (BVMS) from the University of Glasgow Veterinary School in 1958 and began his research career there, mentored by Bill Jarrett in pathology. Hugh was an early member of the team developing the innovative Glasgow integrated approach to teaching and research, believing that an understanding of pathogenesis is essential to diagnose, prevent and treat disease effectively.

Thus, Hugh's career was mainly within multidisciplinary groups. This approach was not without difficulties as it involved pathologists, physicians, surgeons and others – all strong characters offering a range of opinions. Hugh brought great intellect and knowledge to this exercise as well as tact, understanding and his legendary good humour, which made him universally popular. However, he also could be very determined, which was the basis of his investigative skills. He became MRCPath by publication in 1973 and FRCPath in 1985.

Hugh's research experience was wide ranging and highly collaborative. With various colleagues he worked on cardiovascular disease; on horse parasitology; on control measures for parasitic bronchitis and gastroenteritis in calves; in Kenya, where biomathematics were used to suggest a vaccination regime against East Coast fever that is still in use today; and on bovine viral infections, particularly of the mammary gland. He also assisted his wife Myrtle, an Edinburgh veterinary graduate, in her research for a PhD in anatomy.

Hugh considered his major contribution to animal health to be the understanding of the causes and pathogenesis of several important respiratory diseases of cattle. He and his collaborators set up a network of veterinary surgeons throughout Scotland and the north of England who would alert them to cases of interest. In this way they obtained sufficient numbers to allow them to unravel the perplexing nature of conditions like fog fever, bovine farmer's lung, various pneumonias of calves, and a new form of infectious bovine rhinotracheitis.

Hugh was passionate about education. He was deeply involved in developing and delivering undergraduate teaching programmes at Glasgow Veterinary School. At postgraduate level, he mentored a further generation of experimental veterinary pathologists with global reach. He was particularly sought after for advice on improving veterinary education in the UK and abroad, as shown by his appointment as First Secretary of the European Association of Establishments for Veterinary Education. He also supported the ERASMUS programmes for inter-university student exchanges.

As well as serving his university, Hugh worked tirelessly for professional bodies such as the Royal College of Veterinary Surgeons (RCVS), the British Veterinary Association and the Royal College of Pathologists, where he was Chair of the Veterinary Pathology Examiners from 1988 to 1991, and a member of the SAC in Veterinary Pathology from 1991 to 1994.

Hugh and his wife Myrtle were enthusiastic walkers of the Scottish mountains, and he also supported Myrtle and his daughter Victoria, both accomplished competitive horsewomen. Latterly, he took up that other Scottish passion – golf.

Myrtle died in 2011. Hugh is survived by Victoria, her husband Andrew and their daughter Isabel.

Shortened, and reproduced with permission, from The Veterinary Record.

Written by former colleagues:
Norman Wright
Max Murray
Jack Boyd
Oswald Jarrett

Consultants: new appointment offers

The following appointments have been offered and are subject to acceptance by the applicants. The lists are prepared by the College's Workforce department, on the basis of returns completed by College assessors on consultant advisory appointment committees submitted by 29 October 2018.

Please note, we receive no return following 20% of AACs. Any forms received after 29 October 2018 will be published in the next issue. If you do not take up your post, or have additional information, please inform the Workforce department: workforce@rcpath.org. Whenever you move home or job, please remember to inform the College Membership department, too: membership@rcpath.org

Chemical pathology appointments

Region	Employing body	Base hospital	Appointee
South West	Royal United Hospitals Bath and University Hospitals Bristol	Across trusts	Dr Paul F Downie
Yorkshire and the Humber	Leeds	Across sites	Dr Kevin A T Stuart

Haematology appointments

Region	Employing body	Base hospital	Appointee
East of England	West Suffolk	West Suffolk	Dr Isabel C Lentell
Kent, Surrey and Sussex	Brighton and Sussex	Across sites	Dr Thomas Rider
Kent, Surrey and Sussex	East Kent	Kent & Canterbury	Dr Sreetharan Munisamy
Kent, Surrey and Sussex	Surrey and Sussex	East Surrey and Crawley	Dr Cornel Dragan
Kent, Surrey and Sussex	Western Sussex	St Richard's	Dr George E Double
Northern Ireland	Northern Health and Social Care	Antrim Area	Dr Suzanne M McPherson
North West	Salford Royal	Salford Royal	Dr Khowla Hashaishi
South London	King's College	King's College	Dr Varun Mehra
South London	King's College	King's College	Dr Robin Sanderson
South London	Lewisham and Greenwich	University Hospital Lewisham	Dr Sarah H Oram
South West	Royal Cornwall	Royal Cornwall	Dr Michelle V Furtado
South West	Royal United Bath	Royal United	Dr Mark W Robinson
South West	Taunton and Somerset	Musgrove Park Hospital	Dr Jacqueline A Ruell
Wales	Aneurin Bevan	Royal Gwent	Dr Ali J Mahdi
Wales	Cardiff and Vale	University Hospital of Wales	Dr Nagah G Elmusharaf Abdelrahman
Wessex	Hampshire	Across sites	Dr Katherine B Smith
Wessex	Hampshire	Across sites	Dr Marianna Koperdanova
West Midlands	Birmingham Women's and Children's	Birmingham Women's and Children's	Dr Nyree O Cole

Histopathology and cytology appointments

Region	Employing body	Base hospital	Appointee
East of England	North West Anglia	Peterborough	Dr Ashraf E K Ibrahim
East Midlands	Kettering	Kettering	Dr Laila Hatsell
Kent, Surrey and Sussex	Brighton and Sussex	Royal Sussex County	Dr Catherine Guy
Kent, Surrey and Sussex	Surrey and Sussex	East Surrey	Dr Mary Jones
North West	East Lancashire	Royal Blackburn	Dr Madhu Rao
North West London	Imperial	Across sites	Dr Panagiota Mavrigiannaki
Northern Ireland	Northern Health & Social	Antrim	Dr Andrew G O'Hara
Thames Valley	Milton Keynes	Milton Keynes	Dr Jenish R Patel
Wales	Abertawe Bro Morgannwg	Morriston	Dr Tawfik M Elazzabi
Wales	Betsi Cadwaladr	Across sites	Dr Rhiannon Trefor
West Midlands	University Hospitals Coventry & Warwickshire	University Hospital Coventry	Dr Aneeshya Kandiyil

MM, CCDC, Virology & Epidemiology

Region	Employing body	Base hospital	Appointee
East Midlands	Northampton General	Northampton General	Dr Prasanna Kumari
Kent, Surrey and Sussex	Medway	Medway Maritime	Dr Dimitrios Mermerelis
Kent, Surrey and Sussex	Surrey and Sussex	East Surrey	Dr Stephanie J Smith
North, Central & East London	Barts	Barts	Dr Maria T Cutino-Moguel
South London	St George's	St George's	Dr Amber R Arnold
South London	St George's	St George's	Dr Marina Basarab
Thames Valley	Milton Keynes	Milton Keynes	Dr Prithwiraj Chakrabarti
North West	Royal Liverpool & Broadgreen and Aintree	Liverpool Clinical Laboratories	Dr Rashmi Gupta
North West London	The Whittington	Whittington	Dr Trupti Patel
Wales	Cwm Taf	across sites	Dr Susannah J A Froude
West Midlands	Public Health Laboratory Birmingham and Heart of England	Birmingham	Dr Amy Chue

Consultant clinical scientists – chemical biochemistry

Region	Employing body	Base hospital	Appointee
West Midlands	Public Health Laboratory Birmingham and University Hospital Birmingham	Birmingham	Dr Michael Kidd

Consultant clinical scientists – virology

Region	Employing body	Base hospital	Appointee
Yorkshire and The Humber	Northern Lincolnshire and Goole	Scunthorpe General	Mr John A Shepherd

Examination results

Successful candidates for the Part 1 Examination

The following candidates have passed all components of the relevant Part 1 examination.

Clinical Biochemistry

Gawri Prabhashika Nandasena Abeynayake
Kate Fenna
Lewis Green
Chi Chun Ho
Jonathon Howe
Christina Kanonidou
Lina Kayali
Claire Richardson
Jun Guan Tan
Joseph Malcolm Taylor
Andrew Teggert
Sally Thirkettle

Genetics

Celia Duff-Farrier
Jade Heath
Rebecca Lewis
Nicholas Parkin
Julia da Conceicao Pereira Baptista
Paul Warman
Elizabeth Watson

Haematology

Ammar Al Sheriyani
Rahaf Altahan
Morawakage Amila Erandi Amarasena
Mariam Amer
Asma Batool
Adam Bond
Charlotte Brierley
Stephanie Bruce
Ling Cao
May Anne Cheong
Abigail Downing
Kushani Ediriwickrema
Sammy Fergiani
Andrzej Frygier
Caroline Grist
Gillian Horne
Omer Javed
Wei Ying Jen
Attika Khalid
Thinzar Ko Ko
Marwan Cheng Kuang Kwok
Nicholas Lafferty
Ioanna Lazana
Chun Tsu Lee
Eamon Mahdi
Kodagoda Gamage Manurie Prabhasika
Mohd Shahrin Mohd Noh
Kathryn Moss
Georgina Naylor
Clare Oni
Maria Rita Peralta
Paolo Polzella
Edward Poynton
Prabina Rai
Iram Saeed
Richard Salisbury
Suthesh Sivapalaratnam
Zar Ni Soe
Emma Stewart
Surenthini Suntharalingam
Molham Tahhan
Anna Tarnakina
Kathryn Thornton
Hayat Ullah
Victoria Ware
Shehana Wijethilleke
Danmei Xu

Haematology Clinical Science

Nicola Svenson
Darren O'Brien

Histocompatibility & Immunogenetics

Felicity May
Agnieszka Ojrzynska
Franco Tavarozzi
Sharon Vivers
Emma White

Histopathology

Maha Abushamma
Samah Al Abri
Rawan Albahnasi
Jocelyn Louise Aldridge
Amal Algarni
Rafan Al-mutar
Khaled Al-Sawalmeh
Rofieda Alwaqfi
Huma Arshad
Amna Babar
Nusaiba Babiker
Adarsh Barwad
Saima Batool
Surya Kumar Bera
Kaneeka Bhatnagar
Madiha Bilal
Daniela Catargiu
Niall Corry
Rory Crotty
Irini Nabil Nassif Danial
Indranil Das
Harry John Delaney
Supriya Dhar
Rose Eapen
Shereen El Mashad
Rawda El Shennawy
Huda Fadlelseed
Javeria Faridi
Varuni Upamali Fernando
Jalaja Mary George
Malini Goswami
Kathryn Griffin
Krishnendu Halder
Brian Hanley
Reem Hassan
Nour Hemali
Lin Lin Htun
Ruqayya Ishaq
Iman Kareem
Fatima Khalid
Sana Khalid
Anam Khan
Oonagh King
Gittwa Vatsaraj Kottangal
Yamini Krishna
Lekha Krishnan Nair
Phyo Wai Kyaw
Louise Marie Lane
Jie Lin Jaslyn Lee
Jing Xi Joshua Li
Samuel Likumbo
Sin Siuew Lim
Zahraa Majed
Aalaa Majed
Barry McGinn
Rebecca McKerrell
Debapriya Mehrotra
Jerry Christian Nagaputra
Daniel Nava Rodrigues
Ka Man Joanna Ng
Yunbi Ni
Sadaf Noor
Michael Nweke
Thomas Oliver
Kavitha Krishna Pai
Samuel Pattle
Burcin Pehlivanoglu
Priyanka Phadnis
Thomas Prickett
Laura Proctor
Aafia Qasim
Jipson Quah
Rani R
Rashmi R
Farashin Rashid
Aman-Ur Rehman
Claire Ruddiforth

Kaushik Saha
Arpita Saha
Eman Mostafa Salem
Thar Htet San
Piyabi Sarkar
Vivek Sekhawat
Dominique Yuan Bin Seow
Khadija Shafqat
Sayali Shinde
Yik Ka So
Summaya Sohail Chaudry
Charlotte Spencer
Saraswathy Sreeram
Vinaya Srirangam Nadhamuni
Qudsia Sultan
Sherin Susheel Mathew
Hui Min Tan
Lisa Thompson
Anne-Marie Helena Toms
Albina Venus
Rupesh Wahane
Johanna Wall
Laura Wastall
Alice Westwood
Olaf Woods
Asma Zafar
Ghazi Zafar
Muhammad Zainelabideen Youssif

Immunology
Sai Suda Duraisingham
John Guly
Kristen Lilly
Mark Ponsford
Adrian Shields
Susan Tadros
Tyng Hwey Tan
Emily Zinser

Infection
Osama Hassan Mohammed Ahmed
Furqan Amjad
Donald Asprey
Anjaneya Bapat
Ranajoy Sankar Bhattacharya
Mark Campbell
Muge Cevik
Robert Gray
Ashley Horsley
Salman Khurshid
Maria Krutikov
Thomas Lamb
Nicholas Laundy
Clare Siobhan Logan
Hugh McCaughan
Emma McGuire
Naomi Meardon
Samira Mohd Afzal
Tara Moshiri
James Norman
Charlotte Patterson
Ruth Payne
Joanna Mary Pocock
Thomas Rampling
Pooja Ravji
Andrew Taylor
James Veater
Natasha Weston
Stephen Woolley
Jonathan Youngs

Medical Microbiology & Virology
Wijewickrama Punchihewage Harshula Abeydeera
Noora AL Busaidi
Zahra ALAamri
Mohey Alawa
Muna AL-Mahrouqi
Mridu Anand
Milo Cullinan
Aaron Doherty
Neeta Gade
Sameer Kassim
Navinda Liyanage
Olubukola Oluyombo
Mehul Panchal
Ahmed Shams
Priscilla Stephen
Tee Keat Teoh
Sukanya Verma
Muna Yousif

Molecular Pathology
Holly Doyle

Reproductive Science
Sophie Reid
Samantha Rhodes
Eleanor Taylor
Andrew Thomson
Dawn Yell

Toxicology
Scott Burton

Veterinary Pathology
Carlo Bianco
Beatriz Vidana

Successful candidates for the Part 2 Examination

The following candidates have passed all components of the relevant Part 2 examination.

Clinical Biochemistry
Jennifer Atherton
Benjamin Jones
Hayley Sharrod-Cole
Claire Manfredonia
Mahtab Sharifi

Forensic Pathology
Tamara Mary McNamee
Jamie Edward Robinson

Haematology
Habibah Abdul Halim
Elizabeth Adegbenro
Saad Zein Alabdin Mohammed Ahmed
Samah Alimam
Mohammed Altohami
Charlotte Attwood
Stephen Booth
Catherine Booth
John Brewin
Oliver Charles Cohen
Claire Corrigan
Antony Francis Cousins
Nicholas Cunningham
Hyacinth Neelakshi De Silva
David Donaldson
Adil Abozaid Eissa
Karl Thomas Ewins
Jenna Fielding
Winifred Theodosia Oluremi French
Noha Gurashi Abdallah Gasmelseed
Hannah Giles
Alice Hart
Sarah Hartley
Mahmoud Mohamed Khaled Hamdy Hellal
Niamh Keane
Mai Khalifa Mohammed
Francesca Kinsella
Lauren Kirkpatrick
Chi-hang Kwok
Michael Manson
Christopher McDermott
Susan McNeill
Bethany Mitchell
Ryan Mullally
James William Murray
Nadreen Ali Khidir Mustafa
Aideen Therese O'Neill
Andrew Page
Jesal Patel
Angharad Pryce
Deborah Rahman

Sabia Rashid
Anindita Roy
Joseph Sharif
Gill Harinder Singh
Yassir Mahdi Mahgoob Suliman
Georgina Talbot
Sophie Todd
Paraskevi Untiveros
Caroline Wall
Dana Warcel
Emily Margaret Rhona Watts
Victoria Williams
Ruth Witherall
Philippa Jane Woolley

Histocompatibility & Immunogenetics
Deborah Pritchard

Histopathology
Zainab Abdawn
Muna Mohi Eldin Yousif Ahmed
Bibi Leila Roofeida Ahmed
Rabia Ahmed
Safina Ahmed
Sarah Alexander
Fathiya Salem Mohammed Al-Rahbi
Shaniar Rafee Aziz Aziz
Khairat Abdelkader Battah
Jennifer Mary Brown
Naomi Carson
Michelle Ceci
Xin Min Cheng
Gregory Cross
Charisma Shahi Fernando
Oliver Foot
Amy Ruth Gilbert
Adam Goodchild
Efthymios Hadjimichael
Zinah Dheyaa Ahmed Hamdi
Nwamaka Ikpa
Steven Hamill Irwin
Nuor Sabah Mohammed Jamil
Alexandra Rui Wan Kang
Gavin Malcolm Laing
Man Wah Lam
Wai Kwan Lee
Laura Alison Mitchell Maclean
Muhammad Zain Mehdi
Sabina Kaur Mistry
Martina Tessie Munonyara
Jayanjana Asanthi Nileththi
Joe Wen Ong
Marie O'Riordan
Timothy George Palmer
Maitrayee Roy
James Sampson
Bijal Shah
Joy Ursula Lauren Staniforth
Amos, Zhi En Tay
Nairi Tchrakian
Eu-Wing Toh
Seemeen Umar
Alphy Sara Varughese
Leon Veryard
Afsheen Wasif
Maximilian Alastair Whibley
Isabel Jennifer Woodman

Immunology
Melanie Sarah Hart
Rachael O'Brien

Medical Microbiology
Nawal Alkindi
Georgina Beckley
Aarti Chadha
Cordelia Coltart
Zaneeta Dhesi
Olubukola Esho
Katie Fong
Kathryn French
Ana Maria Garcia Mingo
Mashaier Hamad
Brama Hanumunthadu
Susanne Helena Catherine Hodgson
Christopher William Holmes
Alexander Howard
Sarah Macalister Hall
Cara Mary McKeating
Juliette Mutuyimana
Vivek Nayak
King Man Kevin Ng
Matthew O'Shea
Mary Lturt Peirse
Davina Sharma
Robert Halil Shaw
Syba Sunny
Theodoros Vrouchos
Chloe Jayne Walsh
James Stephen Wilson
Alice Sarah Wort

Neuropathology
Colin Geoffrey Saysell

Paediatric Pathology
Amelia Heaford
Sophie Stenton

Veterinary Pathology
Tobias Floyd
Alwyn Jones
Maresa Sheehan
Simon Spiro

Virology
Shazaad-Saleem Yasin Ahmad
Lisa Jayne Berry
Sophie Gillett
Natasha Gayathri Jesudason

Successful candidates for the Certificate Examinations

The following candidates have passed all components of the relevant certificate examination.

Certificate in Higher Autopsy Training
Clare Rowena Bunning
Adam Dallmann
Katie Louise Dickinson
Peter Mark Ellery
Seth Kwasi Amenyo Horsu
Christopher Nitharshan Ligory
Yvonne McCartney
Mutaz Ibrahim Elsiddig Mohammed Nur
Neil Alfred Robinson
Kristina Robinson

Higher Cervical Cytology Training
Yinka Tosin Fashedemi
Hui Yin Lo
Katie McDonald
Timothy Irimu Murigu
Irfan Sagir Khan
Amos, Zhi En Tay
Bingcheng Wu

Combined Infection Certificate Examination
Simon Fox
Chris Lawrence
Joyeeta Palit
Thomas Parks
Victoria Shivji
Nicholas Wong

Successful candidates for the Diploma Examination

The following candidates have passed all components of the relevant diploma examination.

Diploma in Dermatopathology
Eleni Ieremia
Kristina Semkova

The Dark Circle: interesting yet misleading

Dear Editor,

I liked your recent review of The Dark Circle in the *Bulletin* (Issue 182, April 2018, p135). I had decided to read the book as I have a longstanding interest in tuberculosis (TB). I agree that the characters are interesting and quite entertaining, especially as the author follows them into old age. They are much more interesting than the patients in Thomas Mann's 716-page opus The Magic Mountain, even though Mann received the Nobel Prize for literature.

My main complaint about The Dark Circle is that it must leave the lay reader with the impression that the NHS has been the solution to tuberculosis, but this is simply not true.

During the 19th century, the death rate from TB in England and Wales was in the order of 50,000 per annum, but this fell steeply and steadily from 1900, apart from upward blips during the two world wars. This big reduction was the result of the application of basic public health measures, which sprang from the works of Robert Koch and Louis Pasteur, supplemented by the Mantoux test and, eventually, the BCG vaccine. The NHS only came along in 1948! The chest clinics and associated inpatient beds have remained the responsibility of local authorities.

Apart from the persistent work of the public health doctors, which continues to this day, the other group who are unrecognised in the story are our veterinary colleagues. Many of the children in the upper floor of the 'Gwendo' would have been suffering from milk-borne TB, which has now disappeared from the UK thanks to the efforts of people like Alfred Wight (aka James Herriot) who, in 1941, took his bride on a working honeymoon in the middle of Wensleydale. There, he spent his time testing cattle for TB while his wife did the paperwork for him.

Thousands of farms have had their businesses wrecked and, in recent years, over 270,000 cattle had to be slaughtered. So the fight goes on even in the UK, but the problems in places like South Africa and Southeast Asia are on a different scale altogether.

Persky's day trip to the Folkestone Races was especially disappointing for me. That quartet would not have been let out if any of them had been infective but there was no mention of any laboratory support at the 'Gwendo'.

Both Mann and Grant ignore the pathologists and their staff. I did a great deal of TB work in the late 1950s but I fear that we pathologists all remain invisible unless we are investigating murder.

With best wishes,

Dr Alexander Kennedy
Retired Fellow

Response from reviewer of The Dark Circle

I am most grateful to Dr Kennedy for pointing out my egregious failure to note the absence of laboratory staff in The Dark Circle.

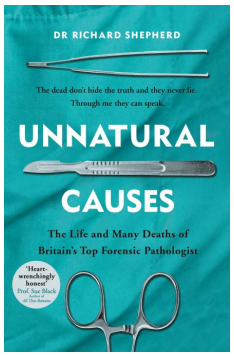
Our ongoing efforts to explain our role to the world clearly need to include vigilance in the world of fiction.

Perhaps more of us should follow the lead of chemical pathology trainee Dr Michelle Muscat – our 2017 Furness Prize winner – and write novels about 'real' pathologists (Issue 182, April 2018, p110). A review of a book from another pathologist turned author follows on the next page,

Dr Lorna Williamson
***Bulletin* Editor**

REVIEWS

Unnatural Causes: The Life and Many Deaths of Britain's Top Forensic Pathologist



By Dr Richard Shepherd
Michael Joseph, 2018
£20.00, 400 pp, hardback
ISBN: 978 07181 82717

Forensic pathology is a mystery to a medical novice like me: what's it like to deal with a dead body? Why would you want to do it? I was hoping that this memoir would answer both questions. It did – I could barely put it down.

Dr Richard Shepherd was destined for a career in forensic pathology after becoming fascinated with a textbook (Simpson's Forensic Medicine) as a teenager, complete with its graphic images and exciting descriptions of causes of death. Over his long career he performed more than 23,000 autopsies, including high profile cases such as the deaths of Princess Diana and Stephen Lawrence, the Marchioness ferry disaster, 9/11 and the Hungerford massacre.

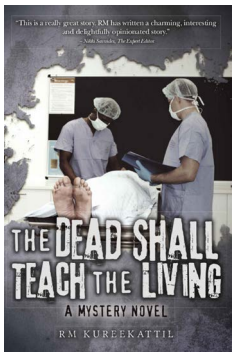
Lingering worries about how disturbing the content would be (and – don't get me wrong – it is disturbing) were soon forgotten with the second-hand enthusiasm I felt for every case. Particularly surprising was that the thing I dreaded the most – anything to do with children – was so interesting. Though tragic, it is intriguing to see the increase in awareness of child abuse and neglect, and how sudden infant death syndrome (SIDS) is diagnosed, charted from the view of the forensic pathologist.

Also unexpectedly engaging was Shepherd's work on restraint cases. Prompted by the death of Joy Gardiner, he set out to increase understanding among the police of restraint as a cause of death, particularly among those who may have sickle cell trait – making them more vulnerable. Shepherd's work to prevent deaths like this is impressive, especially given the tensions surrounding deaths in police custody.

Shepherd's excellent whodunnit storytelling and ability to drip-feed the facts as if in real time will appeal to all true-crime lovers. It's gritty and gory but, with the emphasis mostly on finding the truth rather than death itself, is an enjoyable read. Examining the darkest and most violent parts of humanity takes its toll and Shepherd doesn't hide this fact when talking about the effect his career has had on his life, his family and his mental health. Becoming increasingly detached and withdrawn, he admits: 'I was much better at managing my strong emotion than experiencing it.' The book is brave, honest and gripping throughout.

Karina Lewis
Digital Support Officer

The Dead Shall Teach the Living: A Mystery Novel Volume 1 (The dead, the Dead, and the Living)



By R M Kureekattil
CreateSpace, 2017
£7.14, 210 pp, paperback
ISBN: 978 19746 06009

I am not an avid novel reader, but this intriguing work by a fellow pathologist took me by surprise. The story is an interesting mystery depicting autopsy practice, with added charm and emotions. The author, although a novice, has certainly done a good job in keeping the reader gripped until the end.

Without giving away the suspense of the story, it is about a young pathologist and his wife who move to Australia from India in pursuit of work and education. The pathologist feels happy and fortunate to have found a placement in a department, but soon discovers the strange intricacies of this new workplace.

There are adventurous and unpredictable twists and turns in the flow of the novel. Many chapters are prefaced with a proverb, which leaves one guessing the mystery that may unfold. In addition, the author attempts to make it educational by describing some medical conditions with their relevance to autopsy practice.

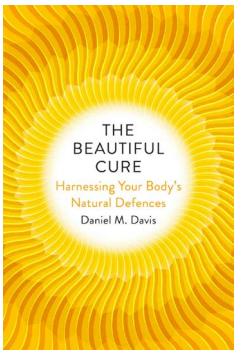
I suspect some readers may find it difficult to understand the proverbs used and their association to religious or mythological backgrounds. But the author has attempted to describe their meanings and how they relate to the story. I felt the story could have been more elaborate and some chapters could have been longer. After completing the novel, I was left with a thirst to read more of the story.

Nevertheless, overall I think it is a worthy novel and I would recommend it to everyone, whether a pathologist or otherwise. It is heartening to see a pathologist showcasing his other talents, which is very inspiring. Congratulations to the author and I hope to see much more of his work in the future.

Ashirwad Merve
Consultant Neuropathologist

The Beautiful Cure: Harnessing Your Body's Natural Defences

By Daniel M Davis
Bodley Head, 2018
£20.00, 272 pp, hardback
ISBN: 978 18479 23738



Awash with subject-specific terminology and a plethora of acronyms, immunology is a complex and intellectually challenging discipline. Thankfully, there are a number of excellent undergraduate textbooks, each boasting an impressive array of online support materials, that facilitate active learning. Those immunology course coordinators who are looking for additional reading to recommend would do well to consider this latest book by Daniel Davis, University of Manchester academic by day, public education of science writer by night – and a budding Brian Cox for the medical sciences.

That Davis is successful at moonlighting is evidenced by this excellent primer on the intricacies of the immune response, the sequel to his well-received The Compatibility Gene from 2014. The first book focused on one facet of the immune system: the cluster of genes comprising the major histocompatibility complex that influences individually tailored responses to pathogens. This follow-up takes a broad view of immunity. It considers the different components of the immune system, how and why their activities vary to meet distinct pathogenic challenges, and how these are orchestrated and controlled. The reader is eased through decades of discovery with an expert's insight into what these revelations mean for future medical interventions, including possible cures for cancer, autoimmune diseases and stress-related illnesses.

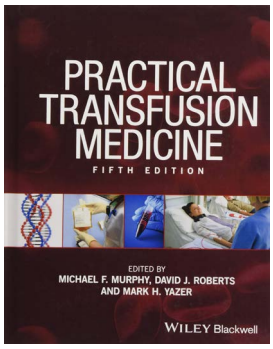
The basic explanation of how our immune system works is skilfully woven into a narrative framework that provides a compelling human story of the researchers who made the advances. Davis has gone to considerable lengths to interview many influential people in the story. This offers valuable insights into their motivation, temperament and ego. The result is a culturally literate description of how hard science is performed by extremely driven individuals striving to set aside personal gain in order to answer fundamental questions for the greater good. Anecdotal examples highlight that, more often than not, scientific breakthroughs marry a clarity of vision with a generous dose of serendipity.

In equal measure history lesson, immunology education and biographical sketch, this is a highly enjoyable and surprisingly accessible book. I would recommend it to anyone wishing to gain a deeper insight into the intricacies of the immune response and how this may be manipulated to promote good health, as well as to those interested in the history of medicine.

Professor Andrew Taylor-Robinson
Chair of Immunology & Haematology, Central Queensland University, Brisbane, Australia

Practical Transfusion Medicine, Fifth Edition

By Michael F Murphy, David J Roberts, Mark H Yazer (eds.)
Wiley Blackwell, 2017
£105.95, 608 pp, hardback
ISBN: 978 11191 29417



Practical Transfusion Medicine, now in its fifth edition, has been in print since 2001 and although it was originally mainly UK based, it has evolved to be a textbook of truly international importance. The impressive cast of international contributors are experts in their field and this book can be used by newcomers to transfusion medicine, medical and scientific trainees in haematology and related fields, as well as transfusion medicine specialists looking for practical and up-to-date advice. Transfusion medicine as a specialty has evolved and matured over the last 15–20 years and this book has been regularly updated so that it accurately reflects basic principles and current evidence as well as addressing the challenges and opportunities within the field.

Starting with a historical overview, the content is then presented in seven sections: Basic Principles of Immunohaematology, Complications of Transfusions, Practice in Blood Centres and Hospitals, Clinical Transfusion Practice, Patient Blood Management, Cellular Tissue Therapy and Organ Transplantation, and Development of the Evidence Base for Transfusion. Each chapter helpfully summarises the key points and provides further reading.

The basic science section is a must-read for all trainee scientists and haematologists – written in an easy and accessible style with good diagrams and helpful tables. The transfusion adverse events section successfully combines science and evidence with practical advice and includes chapters on controversial areas such as transfusion-induced modulation and the purported effects of old blood, which are thought-provoking. The chapter on the challenge of emerging infections and transfusion safety should be read in the context of the later section on patient blood management to reinforce the importance of only transfusing patients when clinically necessary.

The success of transfusion medicine governance through regulation, networking and haemovigilance is a theme developed in section III, while sections IV and V provide practical advice on delivering good transfusion care in every clinical setting and include the principles of patient blood management. Development in the field of transplantation and cellular therapy continues to present exciting therapeutic opportunities and these are well described here. The final section is a combination of basic instruction in evaluating good research evidence, health economics and statistics alongside some horizon scanning – on reflection, I wish I had read this section first!

The fifth edition of Practical Transfusion Medicine is a comprehensive text, and definitely worth updating your library with if you have a previous edition.

Dr Megan Rowley
Consultant in Transfusion Medicine, Royal Infirmary of Edinburgh

NOTICEBOARD

College symposia

February

Challenges in the clinical biochemistry laboratory and beyond

28 February 2019
The Royal College of Pathologists, 6 Alie Street, London E1 8QT
[6 CPD credits]

This meeting is aimed at those with an interest in clinical biochemistry. It aims to provide an update on a range of current analytical and clinical issues, and will challenge some conventional thinking.

The topics covered will look at interpretation of results, and also factors that can cause spurious results to be produced. There will be an update on topical areas in paediatric endocrinology as well as a session challenging some common (mis) conceptions. The final session of the day will look at the impact of laboratory medicine on patient outcomes.

March

Investing in the laboratory workforce of the future

19 March 2019
The Royal College of Pathologists, 6 Alie Street, London E1 8QT
[6 CPD credits]

The conference will use mixed communication methods with short talks and interactive group work, as well as time for reflection, networking and informal discussion.

The outcome will include learning objectives for delegates and formulation of ideas to guide future thinking and policy in the College.

April

Annual liver course run by the UK Liver Pathology Group

4–5 April 2019
The Royal College of Pathologists, 6 Alie Street, London E1 8QT
[CPD credits tbc]

Registration has not yet opened, but if you would like to express your interest and be informed when booking opens, please email us. This year our two annual courses will be linked to provide a two-day course of lectures and practical experience in liver pathology. Delegates have the option of attending either or both of the days.

Day 1 – Liver biopsy in the assessment of medical liver disease

This course, organised by Professor Stefan Hübscher, will be delivered for the ninth time. Presentations by hepatologists and histopathologists cover the investigation of medical liver diseases.

The course provides a practical diagnostic approach to reporting medical liver biopsies, focusing on the importance of clinico-pathological correlation in assessing common patterns of liver damage.

Day 2 – Histopathology workshop on liver pathology

A practical slide-based course which develops the experience of day 1 and also includes sessions on liver tumour pathology.

This year the individual slide viewing will be using iPads. Delegates may bring their own, or pre-book a hired iPad for the day.

May

Advanced molecular brain tumour classification with epigenetic profiling

3 May 2019
The Royal College of Pathologists, 6 Alie Street, London E1 8QT
[7 CPD credits]

This one-day workshop will provide a multifaceted view of epigenetic profiling in adult and paediatric brain tumour diagnostics. The workshop will convey the biological principles of epigenetics in health and disease with a focus on brain tumours and explain how methylation profiles are detected with current array technologies.

The application of machine learning and the development of algorithms used for the classification of brain tumours will be presented. The introduction of methylation profiling and algorithmic classification into CNS tumour diagnostics in the UK will be complemented with examples of how such approaches can be applied to improve precision in paediatric and adult CNS tumour diagnostics. Also the limitations and pitfalls of this technology will be addressed.

Legacies

The objectives of the College are to develop and maintain high standards of pathology education, training and research; promote excellence and advance knowledge in pathology practice; increase the College's influence through a clear, coherent, professional voice; and resource the future of the College. Financially, the College aims to match activities to projected income. The College is funded from subscriptions, examinations and related fees, investment income, grants from outside bodies and charitable donations.

Bequests or legacies are always gratefully received. Leaving a gift to charity in your will is a very special way of helping to secure the future for organisations such as the Royal College of Pathologists. Legacies to the College have the added benefit of being exempt from inheritance tax.

An open legacy may be made toward the general purposes of the College. This is preferred because it allows the College to apply the funds donated where the need is greatest at the time the legacy eventually becomes available. This can be quite different from the perceived need when a will is made. However, you may legally oblige the College to spend the money in a particular area of College work or for a specific purpose by making a restricted legacy.

The College undertakes many educational initiatives. We are actively undertaking an outreach programme that spreads the awareness of pathology throughout the UK and abroad. No other UK college has committed so much time and resources to the future of our profession. This will promote the importance of pathology to the grass roots of this country through schools, colleges, hospitals and many other sites where the general public can have access to important healthcare information. If we are to safeguard the future of our profession in the face of increasing competition from other medical and science career opportunities, it is vital that we commit ourselves to the promotion and awareness of pathology, and continue to train our young professionals to the very highest standards.

This public engagement programme will require financial support from the College for many years to come and we hope very much that we can build upon the tremendous support you have already given and ask if you would consider leaving a legacy. Additions to your existing will can be made using a 'Form of codicil'. This can be found on the following page and at www.rcpath.org/form-of-codicil. Alternatively, please write to us and we will be happy to post you a paper copy.

Please note that witnesses should be present when you sign the form, but it should not be witnessed by a College member or the spouse of a College member. We recommend consulting a solicitor or qualified will-writer before making a will; they should give you all the legal and tax advice that you require.

If you are considering including a legacy to the College in your will, we would very much appreciate being informed of your generous act. To inform us of your bequest or for specific advice on legacies to the College, please contact me.

Daniel Ross
Chief Executive
Daniel.Ross@rcpath.org

Erratum

In the article 'The development of a new service for patients with hyperlipidaemia and ischaemic heart disease' on pages 191–193 of the July 2018 *Bulletin*, atorvastatin was spelled incorrectly in Table 1. The College would like to apologise to Dr David Cassidy and our readers for this error.

Corrigendum

In the article 'Now we are six – adding hepatitis B to the routine childhood vaccination programme' on pages 158–161 of the July 2018 *Bulletin*, the following sentence appeared:

'Infants born to mothers at particularly high risk of HBV transmission (e.g. if mothers have a viral load >106IU/ml at any time in the pregnancy, are hepatitis B e antigen positive or hepatitis B e antigen negative, or have acute hepatitis B in pregnancy)…'

This sentence was incorrect. The correct sentence reads:

'Infants born to mothers at particularly high risk of HBV transmission (e.g. if mothers have a viral load >106IU/ml at any time in the pregnancy, are hepatitis B e antigen positive, or hepatitis B e antibody negative, or have acute hepatitis B in pregnancy)…'

The authors and the College would like to apologise for this error.

Form of codicil

(Please photocopy and complete in block capitals)

I .....(name) of .... (address) declare this to be a Codicil which I make this ..... day of ..... 20..... to my Will which bears the date ..... day of .....(month) .....(year).

I give to the Royal College of Pathologists ('the College'), registered charity number 261035, the sum of £..... (amount in words) ..... free of all taxes whether payable in the United Kingdom or in countries overseas for the general purposes of the College and I declare that the receipt of the Honorary Treasurer for the time being of the College shall be sufficient discharge to my executors.

In all other respects I confirm my said Will. In Witness thereof I have hereunto set my hand the day and year first written above.

Signed by the Testator/rix: ..... (signature) as a Codicil to his/her last Will in our joint presence and by us in his/hers.

FIRST WITNESS: .... (signature of first witness)

Name and address: .....

.....

.....

SECOND WITNESS: ..... (signature of second witness)

Name and address: .....

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Pathological Society of Great Britain and Ireland

Pathological Society
Understanding Disease — Guiding Therapy

The Pathological Society of Great Britain and Ireland offers several grant schemes, namely:

EDUCATION GRANTS/COMPETITION

Bursaries for undergraduate elective or vacation studies (available to Associate Undergraduate Members of the Society)	**27 February & 28 April**
Educational Grant	**1 April & 1 October**
Intercalated Degree (available to Associate Undergraduate Members of the Society)	**31 March**
Student Society Bursary Scheme (available to Associate Undergraduate Members of the Society)	**Open**
Undergraduate Essay Competition (available to Associate Undergraduate Members of the Society)	**30 September**

RESEARCH GRANTS

Best Trainee Research Impact Award	**1 October**
Best Trainee Research Paper Award	**1 October**
CRUK/Pathological Society Predoctoral Research Bursary	**26 March & 26 September**
Early career Pathology Research Grant - Hodgkin & Leishmann	**1 April & 1 October**
Equipment Scheme	**1 April & 1 October**
International Collaborative Award	**1 October**
PhD Studentship	**1 October**
Consultants' Pump-Priming Small Grants Scheme	**1 April & 1 October**
Post-Doctoral Collaborative Small Grants Scheme	**1 April & 1 October**
Trainees Collaborative Small Grant	**1 April & 1 October**
Trainees' Small Grants Scheme	**1 April & 1 October**
Visiting Fellowships	**1 April & 1 October**
NEW for 2019: Cuthbert Dukes Award	**1 April**

TRAVEL GRANTS

Pathological Society Meeting Bursaries	**31 May & 31 December**
Pathological Society Meeting Bursaries for undergraduate	**31 May & 31 December**
Travel & Conference Bursaries	**Open**

JEAN SHANKS/PATHOLOGICAL SOCIETY (JSPS) GRANTS

Pre-doctoral Research Bursary	**1 April & 1 October**
Clinical PhD Fellowship	**1 October**
Clinical Lecturer Support Grant	**1 April**
Clinical Scientist Award	**1 October**

OTHER GRANTS

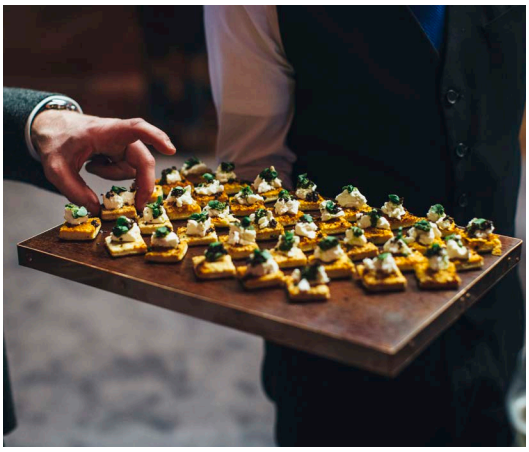
Open Scheme	**1 March, 1 June, 1 September & 1 December**
Pathological Society Meetings Bursaries	**31 May & 31 December**
Public Engagement	**1 March, 1 June, 1 September & 1 December**

Full details are available on our website: www.pathsoc.org or from:
Miss Julie Johnstone, Deputy Administrator, Pathological Society of Great Britain and Ireland. E: julie@pathsoc.org

Pathological Society of Great Britain and Ireland forthcoming meetings

Leeds Pathology 2019 2–4 July 2019

www.pathsoc.org



Events @ No 6 are delighted to offer a range of services to members of the Royal College of Pathologists. We will be an integral part of the team at 6 Alie Street, providing bespoke catering, event management and reception services.

The 2019 diary is now open to members, and includes an **exclusive 20% discount** on venue hire bookings. We would be pleased to discuss how we can provide for your personal and professional meetings and events.

The state-of-the-art facilities provide an ideal environment for meetings, with room capacity up to 210 for lectures and ample break-out spaces for larger conferences. The six different function rooms also mean that any style of event can be held at 6 Alie Street to suit your requirements, whether it's an academic webinar, team away day, filming, fine dining, private celebration or special event.

For more information about hosting your event at 6 Alie Street or to arrange a site visit please contact our dedicated events team on **020 7451 6705** or email **sales@eventsatno6.com**.

We look forward to welcoming you to Events @ No 6.